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THE PRESENT-DAY USE OF INSULINS IN THE TREATMENT OF DIABETES MELLITUS.

By T. A. F. HEALE,
Melbourne.

UNTIL 1953 the insulin treatment of *diabetes mellitus* in Australia was simple enough. Three insulins were available, regular insulin, protamine zinc insulin and globin insulin. Globin insulin was not much used, most insulin treatment being with regular insulin, with protamine zinc insulin, or with both insulins together.

In 1953 isophane insulin (N.P.H. insulin) was introduced. Then early in 1954 came the insulin zinc suspensions, three of them, amorphous insulin zinc suspension or semi-lente insulin, crystalline insulin zinc suspension or ultra-lente insulin, and insulin zinc suspension or lente insulin, the last-mentioned preparation being a ready-made mixture of three parts of amorphous suspension and seven parts of crystalline suspension. Now there are seven insulin preparations (though only six varieties of insulin), and treatment is no longer simple. Each preparation is potent, and each is effective if properly used. The physician's problem is when and how to use these insulins to the best advantage. Most physicians believe that good control of the diabetes is desirable, and that such control does minimize and delay vascular complications, though not entirely preventing them. The discussion which follows is based on this belief.

FACTORS INFLUENCING THE ACTION OF THE INSULINS.

The effect of any insulin in a diabetic patient depends on a number of factors, the most important being the following: (i) the characteristics of the patient; (ii) the characteristics of the insulin; (iii) the dose of the insulin; (iv) the distribution of the diet; (v) exercise; (vi) the presence of acute complications such as infections.

The characteristics of the patient are unknown and unpredictable and just have to be found out. The influence of the patient's characteristics is illustrated most strikingly by those diabetics who are variously known as difficult, unstable, brittle or labile.

The characteristics of the various insulins are known and within certain limits are predictable. The initial choice of the insulin is based on the knowledge of the actions of the various insulins. The properties of action of each insulin (promptness, intensity, peak period and duration) are shown in Table I.

The size of the dose has its effect on insulin action. The larger the dose the longer the duration of action and the later the period of maximum action. The general pattern of action is not altered. The physician often uses the longer action of the larger dose to gain better control of the diabetes; but he can do this only by distributing the carbohydrate of the diet in such a way that it balances the insulin action, particularly during its peak period. This nice balancing of diet and insulin avoids overaction of the insulin and yet retains the benefits of its longer action.

The distribution of the diet during the day, particularly the carbohydrate content, is very important. Proper

TABLE I.
Properties of the Various Insulins.

Type of Insulin.	Onset of Action.	Intensity of Action.	Peak Period of Action.	Duration of Action.
Regular insulin	Less than 1 hour.	+++++	3 to 4 hours.	8 hours.
Protamine zinc insulin	6 to 8 hours.	+	16 to 24 hours.	24 hours+.
Globin insulin	2 to 4 hours.	++	8 to 10 hours.	20 hours.
Isophane (N.P.H.) insulin	2 to 4 hours.	++	8 to 12 hours.	24 hours.
Amorphous insulin zinc suspension (semilente—I.Z.S. (A)	1 to 2 hours.	+++	4 to 8 hours.	12 to 14 hours.
Crystalline insulin zinc suspension (ultralente—I.Z.S. (C))	6 to 8 hours.	+	16 to 24 hours.	24 hours+.
Insulin zinc suspension (lente)	Early, owing to I.Z.S. (A).	++	Two peaks: early, due to I.Z.S. (A); late, due to I.Z.S. (C).	24 hours+, due to I.Z.S. (C).

balancing of the diet and the insulin allows the most effective dose of insulin to be given; in fact, it may make all the difference between success and failure in controlling the diabetes. Its relation to the size of the dose of insulin has been mentioned; here it is discussed in more detail. In general, spreading the food over more meals helps by lessening the metabolic load at any one time. In particular the distribution of food is matched against the time of action of the insulin.

With the prompt and vigorous regular insulin, the meal immediately following the injection should contain a liberal allowance of carbohydrate. Alternatively, a smaller carbohydrate meal given later to meet the period of greatest action may be even more effective.

All the longer-acting insulins have a slower onset of action than regular insulin, and when they are given before breakfast, as they usually are, a relatively small amount of carbohydrate at breakfast is advantageous. The carbohydrate not given at breakfast is then taken later in the day, about the time of maximum action of the insulin being used. Globin insulin acts strongly during the middle and late afternoon, and reactions with this insulin generally occur then. Afternoon tea will prevent any overaction at this time. Isophane insulin also acts strongly in the afternoon, and often in the evening too; occasionally it acts strongly during the night; afternoon tea and supper will prove effective counters to overaction. The period of maximum action and the most likely time for reactions with protamine zinc insulin and crystalline insulin zinc suspension are between midnight and breakfast, and supper is therefore always advisable to prevent overaction then. Insulin zinc suspension (lente insulin), being a mixture of an early-acting insulin and a long-acting insulin, has two periods of maximum activity, one in the afternoon and occasionally before lunch and the other during the night; afternoon tea (or morning tea) and supper are therefore advisable.

When insulins likely to overact during the evening or during the night are being given, a very useful manipulation of diet is to provide a liberal allowance of protein foods at the evening meal and at supper. Sugar is formed slowly from protein, and so is available in a steady fashion over many hours as a counterpoise to the insulin.

The effects of exercise, usual and casual, and of infections and other acute complications are well known and need no elaboration.

CLINICAL CLASSIFICATION OF THE INSULINS.

For clinical purposes the insulins may be divided into the following three groups: (i) the prompt, short-acting insulins—(*a*) regular insulin, (*b*) amorphous insulin zinc suspension (semilente); (ii) the moderately prompt, moderately long-acting insulins—(*a*) globin insulin, (*b*) isophane insulin (N.P.H. insulin); (iii) the slow, very long-acting insulins—(*a*) protamine zinc insulin, (*b*) crystalline insulin zinc suspension (ultralente) Insulin zinc suspension (lente), being a mixture of the amorphous and crystalline suspensions, has the properties of both components; its early action is due to the amorphous fraction and its sustained long action is due to the crystalline fraction.

CLINICAL USES OF THE INSULINS.

Regular Insulin.

Regular insulin is also known as unmodified insulin, soluble insulin, original insulin or just plain insulin. The most commonly used term here is regular insulin. In America the term "regular insulin" applies to the amorphous form of unmodified insulin, the crystalline form being known as crystalline insulin. All brands of unmodified insulin in Australia are crystalline insulin. Regular insulin is a clear, aqueous solution of pH 3·0 to 3·5. It contains no buffer. The amorphous and crystalline forms are identical in action (Table II).

Regular insulin is a quick, vigorous-acting, short-duration insulin. Its clinical uses depend on these properties. Because of its short action it is given more than once in the day, the frequency of administration varying in different patients and in different circumstances. Regular insulin is an essential insulin.

Uses.

Regular insulin is used in the following circumstances.

1. As an aid to a long-acting insulin in the daily control of the diabetic patient. It adds a quick effect to the long action of its partner insulin. This is the most common use.

TABLE II.
Physical Nature of the Various Insulins.

Type of Insulin.	Physical Form.	Precipitate.	pH.	Buffer.	Zinc. (Milligrammes per 100 Units of Insulin.)	Modifying Agent.	
						Type.	Milligrammes per 100 Units of Insulin.
Regular insulin	Solution.	None.	3·0 to 3·5	None.	0·016 to 0·04	None.	—
Protamine zinc insulin	Suspension.	Amorphous.	7·2	Na_2HPO_4.	0·2 to 0·25	Protamine.	1·25
Globin insulin	Solution.	None.	3·4 to 3·8	None.	0·25 to 0·35	Globin.	3·6 to 4·0
Isophane (N.P.H.) insulin	Suspension.	Crystalline.	7·2	Na_2HPO_4.	0·016 to 0·04	Protamine.	0·5
Amorphous insulin zinc suspension (semilente).)	Suspension.	Amorphous.	7·2	Sodium acetate.	0·2 to 0·25	None.	—
Crystalline insulin zinc suspension (ultralente).	Suspension.	Crystalline.	7·2	Sodium acetate.	0·2 to 0·25	None.	—
Insulin zinc suspension (lente)	Suspension.	Amorphous and crystalline.	7·2	Sodium acetate.	0·2 to 0·25	None.	—

2. In diabetic acidosis. Here prompt, vigorous insulin action is imperative, and only regular insulin can supply it.

3. During acute complications and after operations. Here the diabetic situation is apt to fluctuate widely and change rapidly. Repeated injections of regular insulin satisfactorily cope with the changing conditions. If the acute complication is mild and short-lasting, regular insulin may be given at four-hour to six-hour intervals, superimposed on the usual programme of long-acting insulin. If the acute complication is severe and longer lasting it is better to use regular insulin alone, giving it as required at four-hour to six-hour intervals until recovery from the complication.

4. In patients requiring very large daily doses of insulin, 200 units or more. Regular insulin is the only practicable insulin to use. It is given two, three or four times a day according to the patient's needs. Special high strengths of insulin are available from the Commonwealth Serum Laboratories, U 100 (100 units per cubic centimetre) and U 300 (300 units per cubic centimetre). These strengths allow the doses to be of reasonable bulk.

5. For certain difficult diabetics. Some diabetics are difficult to control, and for certain of them multiple doses of regular insulin prove superior to all other varieties or combinations of insulins. This just has to be found out by trial. Why these diabetics are difficult to control is not known.

6. In the "old guard". These diabetics started on regular insulin in the early days, were well controlled by it and preferred not to change their insulin as new insulins came along. Leave them alone.

Protamine Zinc Insulin.

Protamine zinc insulin was the first really effective long-acting insulin. It is a suspension of insulin combined with zinc and protamine. It is buffered with disodium acid phosphate to a pH of 7·2. The precipitate is amorphous in nature (Table II). The amount of protamine used is in excess of that required to precipitate all the insulin. Protamine zinc insulin thus always contains much free protamine.

Protamine zinc insulin is a slow starter, but steady and prolonged in effect. With it the patient begins the day well controlled; also its longer than twenty-four hours action provides an overlap effect which covers the slow starting of each day's dose. It is given once daily before breakfast. Sometimes it works alone; more often it needs the quick action of regular insulin added to its own longer action for good effect.

When protamine zinc insulin and regular insulin are both used they are sometimes given as separate injections and sometimes mixed together.

Protamine zinc insulin, alone or with regular insulin, was and still is a good insulin for many diabetics. However, protamine zinc insulin is not now a first choice insulin.

Uses.

Protamine zinc insulin is used for the following patients:

1. Those diabetics who are taking it and are well controlled by it, either alone or aided by regular insulin; there is no need to change these diabetics to any other newer insulin.

2. The occasional patient who is found to be best controlled by protamine zinc insulin, usually aided by regular insulin.

Mixtures of Protamine Zinc Insulin and Regular Insulin.

Mixtures of regular insulin and protamine zinc insulin are intended to provide in a single injection something of the early brisk action of regular insulin together with the long action of protamine zinc insulin.

These mixtures are tricky things and do not function as a simple mixture of regular insulin and protamine zinc insulin. Protamine zinc insulin contains considerable free protamine, and this combines with the regular insulin. The pH of the mixture also falls as regular insulin (pH 3·0 to 3·5) is added to protamine zinc insulin (pH 7·2). A mixture of regular insulin and protamine zinc insulin is really a modified protamine zinc insulin with a lower pH.

Clinical studies of mixtures of regular insulin and protamine zinc insulin show that no worthwhile quick action appears until one and a half to two parts of regular insulin are added to one part of protamine zinc insulin. Additions of regular insulin above the 2:1 ratio further increase the quick action. Mixtures of regular insulin and protamine zinc insulin retain much of the long action of protamine zinc insulin.

Mixtures of regular insulin and protamine zinc insulin should be even mixtures, and this demands a special technique of preparation, as follows: After both insulins are in the syringe, an air bubble is drawn in and used as a mixer; it is run through and through the insulins while the syringe is tipped and turned. The air bubble is expelled before the injection is given. The mixing should not be left to chance. An even mixture gives a uniform effect, a chance mixture gives a variable effect.

A 2:1 mixture (two parts of regular insulin to one part of protamine zinc insulin) has been found to be the most useful one. Other proportions such as 3:2, 3:1, 4:1 may be more effective for certain diabetics. The amount of each insulin is varied to meet the individual requirements for early and late action.

Mixtures of regular insulin and protamine zinc insulin were found to suit many diabetics, but in general they proved less satisfactory than was expected. They are not an insulin arrangement of choice for new diabetics needing insulin.

Uses.

Mixtures of regular insulin and protamine zinc insulin are used for the following patients:

1. Those diabetics already using them successfully.

2. A few diabetics who are found by trial to be better controlled by this arrangement than by any other insulin or combination of insulins.

Globin Insulin.

Globin insulin is a solution of insulin combined with globin and zinc. Its pH is 3·4 to 3·8 (Table II).

It is a quicker starter than protamine zinc insulin, though not so quick as regular insulin. It acts well during the twelve hours or so associated with meals. It is a moderately long-acting insulin; its worthwhile action generally ceases by twenty hours; occasionally its effect lasts for the full twenty-four hours; occasionally its action falls short of even twenty hours.

In general, globin insulin suits diabetics whose fasting blood sugar content is normal or nearly so, and whose glycosuria occurs in the twelve to fourteen hours associated with their meals.

Globin insulin is usually given once a day before breakfast. Though a useful insulin, globin insulin is not a first choice insulin.

Uses.

Globin insulin is used for the following patients:

1. Those diabetics who are already taking it and are well controlled by it. Again there is no need to change these diabetics to any other insulin.

2. Those diabetics who on other long-acting insulins have nocturnal or pre-breakfast reactions, or whose fasting blood sugar level is too low, although reactions are absent. Here the need is for an insulin with less action during the night and first thing in the morning. Globin insulin is such an insulin.

3. Some diabetics who are found by trial to be better controlled by it, given once daily, than by other insulins. Here some peculiarity of the patient's response is best met by globin insulin.

4. Some difficult diabetics. These diabetics are found to be well controlled by globin insulin given twice daily, before breakfast and before or after tea.

Isophane Insulin.

Isophane insulin is also known as N.P.H. insulin (neutral protamine Hagedorn insulin). It is a modified protamine zinc insulin, a suspension of specially prepared protamine zinc insulin crystals. It is buffered to pH 7·2 with disodium hydrogen phosphate. It contains much less protamine than protamine zinc insulin, and all of it is combined with the insulin; there is no free protamine (Table II).

Isophane insulin is a moderately quick starter, acting well during the twelve to fourteen hours associated with meals. Its effect usually lasts for the full twenty-four hours and may continue up to twenty-eight hours. Sometimes it acts for less than twenty-four hours. In general its action is longer than that of globin insulin, but not so long as that of protamine zinc insulin or crystalline insulin zinc suspension (ultralente).

Isophane insulin generally is given once daily before breakfast. As isophane insulin contains no free protamine, any added regular insulin exerts its own prompt and powerful effect; regular insulin is added whenever isophane insulin alone fails to give enough early effect.

Uses.

Isophane insulin is used in the following circumstances:

1. As an insulin of first choice for any new diabetic needing insulin. It may serve alone or may need the addition of regular insulin.

2. Successfully for some diabetics, alone or with regular insulin, when other insulins have failed.

3. For some difficult diabetics who are found by trial to be well controlled by isophane insulin given twice daily, before breakfast and before or after tea. At times regular insulin is added with advantage to the morning dose of isophane insulin.

The Insulin Zinc Suspensions.

The insulin zinc suspensions were discovered by Hallas-Møllar and associates while they were studying the relation between zinc and insulin. They found, by substituting a sodium acetate buffer for the customary phosphate buffer, that insulin in the presence of small amounts of zinc became less soluble and more prolonged in action. By adjusting the pH, amorphous and crystalline compounds were obtained. The duration of action varied with the physical state of the insulin zinc compound, the crystalline form acting for much longer than the amorphous one.

The insulin zinc suspensions are identical chemically, but differ in physical form, being either amorphous or crystalline. They are buffered to pH 7·2 with sodium acetate (Table II). They may be mixed, and when they are mixed each retains its own form and action.

Basically there are only two insulin zinc suspensions, the amorphous suspension and the crystalline suspension. For the proper understanding of the insulin zinc suspensions this fact must always be remembered. A study of the actions of the amorphous and crystalline suspensions (Table I) makes it clear that neither suspension alone will suit more than a few diabetics. A mixture of the amorphous and crystalline suspensions providing both early and prolonged action is much more likely to succeed. After much clinical trial, Hallas-Møllar found that a mixture of three parts of the amorphous suspension and seven parts of the crystalline suspension did suit a majority of diabetics. The success of this 3:7 mixture led to its being marketed along with the separate amorphous and crystalline suspensions.

Having three preparations of the insulin zinc suspensions—(i) amorphous insulin zinc suspension, (ii) crystalline insulin zinc suspension and (iii) insulin zinc suspenson (the 3:7 mixture), though there are only two kinds of suspension, the amorphous and the crystalline—is what confuses many physicians. In theory it would be better to have only the amorphous insulin zinc suspension and the crystalline insulin zinc suspension. With them, the patient could make each day in the syringe the mixture which suited best. But the convenience of a ready-made mixture, even if it did not suit all patients, is obvious, and convenience won. For those diabetics not suited by the 3:7 mixture, an appropriate mixture can be made from the amorphous and crystalline suspensions.

The Nomenclature of the Insulin Zinc Suspensions.

The insulin zinc suspensions are known by various names, which is confusing. Hallas-Møllar named them insulin semilente, insulin ultralente and insulin lente, semilente being the amorphous suspension, ultralente being the crystalline suspension, and lente the ready-made mixture of semilente and ultralente. These names have been widely used.

Hallas-Møllar and other physicians have also used the term "the lente insulins" as a group name for all the insulin zinc suspensions. The similarity between the group name "lente insulins" and the individual name for the ready-made mixture "lente insulin" is surely confusing.

In the 1955 Addendum to the British Pharmacopœia, the following official names are given to the insulin zinc suspensions: (i) insulin zinc suspension (amorphous), (ii) insulin zinc suspension (crystalline), (iii) insulin zinc suspension.

Amorphous insulin zinc suspension is identical with semilente insulin, crystalline insulin zinc suspension with ultralente insulin and insulin zinc suspension with lente insulin.

The British Pharmacopœia names have been criticized. However, I believe that they are the best. They follow the pattern of previous insulin names whereby the names indicate the nature of the insulin. Insulin zinc suspension (amorphous) and insulin zinc suspension (crystalline) are precisely descriptive of the nature of these insulins. Insulin zinc suspension as a name is less satisfactory; that the preparation is an insulin zinc suspension is clear enough; but its real nature is not stated with the exactness of the other two suspensions. However, from the very absence of any qualification it may reasonably be inferred that the preparation is neither wholly amorphous nor wholly crystalline.

By comparison, the alternative names, semilente insulin, ultralente insulin and lente insulin are even less satisfactory. These names tell nothing of the nature of the insulins. Literally they mean half slow, slow, and extra slow insulin, which is not very illuminating.

I have given the British Pharmacopœia names precedence throughout; but the alternative names—semilente insulin, ultralente insulin and lente insulin—are also given. This should avoid misunderstanding.

Amorphous Insulin Zinc Suspension.

Amorphous insulin zinc suspension is also known as semilente insulin.

Amorphous insulin zinc suspension (semilente) is intermediate in action between regular insulin and globin insulin. It is not so prompt as regular insulin (about half an hour later) or as vigorous in action, but its effect lasts longer, though not so long as that of globin insulin.

Uses.

1. The real use of amorphous insulin zinc suspension is to provide the prompt early action in mixtures with crystalline insulin zinc suspension (ultralente). The ready-made mixture, insulin zinc suspension (lente insulin), contains three parts of amorphous suspension and seven parts of crystalline suspension. If greater early action is needed than is provided by the ready-made mixture, it is easy to make an individual mixture from the amorphous and crystalline suspensions.

2. It may have a place in the treatment of an occasional difficult diabetic, given twice daily, before breakfast and before or after tea. There are a few reports of successful use in this way. I have so used it several times, but without success. Further study is desirable.

Crystalline Insulin Zinc Suspension.

Crystalline insulin zinc suspension is also known as ultralente insulin. It is similar in action to protamine zinc insulin; it is a slow starter, but steady and prolonged in effect. It acts for at least twenty-eight to thirty-six hours.

Uses.

1. Its main use is to provide the prolonged effect in mixtures with amorphous insulin zinc suspension (semilente). The ready-made mixture, insulin zinc suspension (lente insulin) contains seven parts of crystalline suspension and three parts of amorphous suspension. If more prolonged action is required than is provided by the ready-made mixture, then an individual mixture can be made from the crystalline and amorphous suspensions.

2. Very occasionally crystalline insulin zinc suspension (ultralente) alone controls a diabetic patient satisfactorily.

Insulin Zinc Suspension.

Insulin zinc suspension is also known as lente insulin. It is a ready-made mixture of three parts of amorphous suspension and seven parts of crystalline suspension. The amorphous component provides the prompt early action and the crystalline component the prolonged effect. This dual action preparation suits many diabetics and the convenience of a ready-made mixture is obvious.

The duration of action of insulin zinc suspension (lente insulin) is usually stated to be twenty-four hours; this does not seem strictly correct. The long action of this preparation is due to the crystalline insulin zinc suspension in it, and crystalline insulin zinc suspension has an action longer than twenty-four hours. The duration of effect of a given dose of the crystalline suspension will be the same whether it is used alone or as part of a mixture with the amorphous suspension, because the crystalline suspension remains its original self in a mixture.

In using insulin zinc suspension the physician should have ever in mind that he is using a mixture of two insulins and not a single insulin. He should think in terms, not of so many units of insulin zinc suspension (lente insulin), but of so many units of amorphous insulin zinc suspension (semilente) and so many units of crystalline insulin zinc suspension (ultralente). Only by thinking thus will the physician really understand what he is giving, and be able to make the proper adjustment of proportions of the component suspensions if the ready-made mixture fails to suit the patient. Some physicians seem not to know that insulin zinc suspension (lente) is a mixture, or else forget the fact when they use it.

Uses.

Insulin zinc suspension (lente insulin) is used in the following circumstances:

1. As an insulin of first choice (equally with isophane insulin) for any new diabetic needing insulin.

2. For some diabetics, with success, when other insulins have failed.

3. For some difficult diabetics, who are found by trial to be controlled by it, given twice daily, before breakfast and before or after tea.

Mixtures of Insulin Zinc Suspension (Lente) and Regular Insulin.

Nabarro and Stowers in 1953 reported a few clinical trials with mixtures of insulin zinc suspension (lente) and regular insulin. They hoped that regular insulin would increase the early effect of the mixture, so making it unnecessary to market amorphous insulin zinc suspension (semilente). The results of the clinical trials were not encouraging.

Hallas-Møliar did not advise mixing regular insulin with insulin zinc suspension (lente). He maintained that it was impossible to foretell the effects of these mixtures because of the interaction of the various insulins. When regular insulin is added the pH of the mixtures falls and the regular insulin is converted into an amorphous precipitate which then changes into a crystalline form identical with crystalline insulin zinc suspension (ultralente). Also at the lower pH some of the amorphous component in insulin zinc suspension (lente) might well change to the crystalline form.

The total result of adding regular insulin to insulin zinc suspension (lente) would be a slowing down and prolonging of the insulin effect, not the desired stronger early action. Altogether, mixing regular insulin with insulin zinc suspension (lente) seemed a chancy business. Hallas-Møllar pointed out that amorphous insulin zinc suspension (semilente) was designed for the very purpose of providing early action. It could be added to insulin zinc suspension (lente), or better still the necessary special mixture could be made from the amorphous and crystalline preparations.

Recently Haunz (1955) and Slayton, Burrows and Marble (1955) in America have reported their experiences with mixtures of regular insulin and insulin zinc suspension (lente). They state that mixtures are feasible and effective. In America insulin zinc suspension (lente) is marketed, but not the separate amorphous and crystalline preparations. The only way in which physicians there can enhance the early action of insulin zinc suspension (lente) is by adding regular insulin. Haunz, and Slayton *et alii* state that most, if not all, the rapid action of regular insulin is retained when mixtures are made in the syringe and immediately injected; the mixtures are not prepared in quantity beforehand. Haunz believes that each insulin in the mixture functions independently, and that with the amount of regular insulin used the pH does not fall to the level at which change to the crystalline form occurs. Hallas-Møllar, discussing Haunz's paper, conceded that there would be a greater early effect from added regular insulin when the mixture was made in the syringe and injected at once. He still feared interaction of the insulins resulting in unpredictable action. He thought that the amorphous and crystalline preparations (semilente and ultralente) should be available in America. Physicians then could make the special mixtures of amorphous and crystalline insulin suspensions to provide the desired combination of early and late action. Mixtures of regular insulin and insulin zinc suspension (lente) would then be unnecessary. I have not used mixtures of regular insulin and insulin zinc suspension (lente). I favour the use of special mixtures of the amorphous and crystalline insulin zinc suspensions whenever insulin zinc suspension (lente) fails to provide the necessary combination of effects.

New Diabetics.

For the new diabetic who needs insulin, the choice is between (i) isophane insulin and (ii) insulin zinc suspension (lente insulin). I do not know of any way of deciding the choice for a particular patient. I just toss a mental coin. The difficulty is not of great moment, for studies have shown that, in general, the time action and effect of isophane insulin and insulin zinc suspension (lente) are very similar, though insulin zinc suspension (lente) tends to act for longer than isophane insulin. The longer action of insulin zinc suspension (lente) would be expected because of its content of crystalline suspension, and this sometimes makes it succeed when isophane insulin has failed. Sometimes, however, isophane insulin proves superior to insulin zinc suspension (lente). The reason for this behaviour is unknown.

When isophane insulin or insulin zinc suspension (lente) is given once daily before breakfast, the patient will respond in one of several ways. The responses to each insulin will be discussed separately.

Isophane Insulin.

When isophane insulin is used, the response will be one of the following:

1. Good control throughout the twenty-four hours. In this happy situation minor alterations of diet and insulin dosage alone will be necessary.

2. Poor control early (after breakfast and after lunch), good control later. More early insulin action is needed, and the addition of regular insulin will provide it.

3. Good control early, poor control later (during the night and before breakfast). More insulin action is required in the later part of the twenty-four hours. There is no way of prolonging the effect of isophane insulin, so a change to an insulin preparation with a longer action is necessary. Insulin zinc suspension (lente) is worth trying; it may provide the extra length of action. If it fails, an individual mixture of amorphous and crystalline suspension is used, with enough of the crystalline component to

give the necessary long effect. The answer for an occasional patient may be a mixture of regular insulin and protamine zinc insulin, the proportions of each being determined by trial, or separate injections of each.

4. Too good control early (blood sugar content too low before lunch or after lunch, or reactions then), good control later. An adjustment of diet will usually meet the situation—a mid-morning feed, or extra food then or afternoon tea, whichever is necessary. When this succeeds, no change in the dose of isophane insulin is made. If alteration of diet is unsuccessful, a change to a mixture of amorphous and crystalline insulin zinc suspensions, with less of the amorphous fraction than in insulin zinc suspension (lente) may be tried.

5. Good control early, too good control later (blood sugar level too low during the night or before breakfast, or reactions then). Again an alteration of diet will generally serve, extra food at supper being given. If this succeeds, there is no need to alter the dose of isophane insulin. Sometimes a reduction of the dose of isophane insulin alone or with extra food may be satisfactory, the smaller dose avoiding the late over-effect while retaining a good early effect. If none of these adjustments is successful, change to another insulin. Globin insulin with its lesser effect during the night, or a mixture of amorphous and crystalline insulin zinc suspensions with less of the crystalline, long-acting component than in insulin zinc suspension (lente), may give satisfactory control.

Insulin Zinc Suspension (Lente).

When insulin zinc suspension (lente) is used, the response will be one of the following.

1. Good control throughout the twenty-four hours. Here small alterations of diet and insulin dosage alone will be necessary.

2. Poor control early (after breakfast and after lunch), good control later. A mixture with more amorphous suspension than is contained in insulin zinc suspension (lente) is needed to provide extra early action. It is simpler and better and certainly more understandable to make these individual mixtures with the amorphous and crystalline suspensions rather than to add more amorphous suspension to insulin zinc suspension (lente). The addition of amorphous suspension to insulin zinc suspension (lente) is confusing, for the exact composition of these secondary mixtures in terms of their component insulins is not immediately obvious and takes some working out.

3. Good control early, poor control later (during the night and before breakfast). A mixture with more crystalline suspension than is in insulin zinc suspension (lente) is required to give the extra long action. The special mixture is made from the amorphous and crystalline suspensions, and not by adding more crystalline suspension to insulin zinc suspension (lente).

4. Too good control early (blood sugar level too low before lunch and after lunch, or reactions then), good control later. The solution to the problem may be an adjustment of diet, a mid-morning feeding or extra food then or afternoon tea, whichever is indicated, the dose of insulin zinc suspension (lente) remaining unchanged. If this is not successful, use a mixture containing less amorphous suspension than in insulin zinc suspension (lente). Sometimes alterations in the diet and in the insulin mixtures are both needed. Very occasionally crystalline insulin zinc suspension (ultralente) alone may prove best.

5. Good control early, too good control later (blood sugar level too low during the night or before breakfast, or reactions then). Here an alteration of the diet may be all that is needed, extra food being given at supper. No alteration in the dose of the insulin zinc suspension (lente) may then be required. At times a reduction of the dose of insulin zinc suspension (lente) alone or with alterations in diet may prove satisfactory, the reduced dose avoiding the late over-action while retaining sufficient early effect. If these adjustments are not successful, use a mixture containing less crystalline suspension than is in insulin zinc suspension (lente). If such a special mixture does not solve the problem, a change to an insulin with less action during the night is indicated. Globin insulin or even isophane insulin may be the answer.

The Difficult Diabetic.

Some diabetics are rightly called "difficult diabetics". They are not controlled well by any of the usual once-a-day plans of insulin administration; they need it more often than that. It usually takes a while to find out the best arrangement of insulin or insulins for these difficult diabetics, but finally most of them are satisfactorily controlled. A small number, variously known as "labile diabetics", "brittle diabetics" or "unstable diabetics", are particularly hard to manage. Their behaviour is characterized by wide and irregular swings in blood sugar levels, with heavy glycosuria alternating with satisfactory urine findings or with an ever-varying mixture of good, bad and indifferent findings. Insulin reactions are frequent, unpredictable, often severe and difficult to eliminate. Not unnaturally the morale of these patients is shaken by the uncertainties of their diabetic life, and they are often emotionally unstable. Some physicians have thought that the emotional instability is the cause of the diabetic instability, but others doubt this. I do not think that anyone as yet has given a really satisfactory explanation of the extraordinary behaviour of the labile diabetics. The labile diabetic poses a double problem for solution: (i) the poor control; (ii) the severe insulin reactions which are a serious hazard. Finding a plan of treatment which will give the most control with the fewest insulin reactions, and these only mild ones, is usually a long, tedious and exasperating struggle for both the patient and the physician. The physician should not admit defeat too readily, for in the end a satisfying degree of control is often achieved, or if not, at least a worthwhile improvement. Only a few diabetics defy all attempts at control. Even with the rare unmanageable diabetic it is usually possible to eliminate the severe reactions, and this is a great gain.

The plans of insulin administration which have been used are as follows: (i) Regular insulin two, three or four times daily. (ii) Protamine zinc insulin and regular insulin separately before breakfast and regular insulin before tea. (iii) Globin insulin before breakfast and before or after tea. (iv) Regular insulin before breakfast and lunch and globin insulin before tea. (v) Isophane insulin before breakfast and before or after tea. (vi) Isophane insulin and regular insulin (mixed) before breakfast and regular insulin before tea. (vii) Isophane insulin and regular insulin (mixed) before breakfast and isophane insulin before or after tea. (viii) Isophane insulin and regular insulin (mixed) and a separate injection of protamine zinc insulin before breakfast. (ix) Regular insulin before breakfast and lunch and isophane insulin before tea. (x) Insulin zinc suspension (lente) before breakfast and before or after tea. (xi) A special mixture of amorphous insulin zinc suspension and crystalline zinc suspension before breakfast and before or after tea. (xii) Amorphous insulin zinc suspension (semilente) before breakfast and before or after tea.

These plans take advantage of the characteristic time action of the various insulins and in one way or another try to provide an appropriate amount of insulin action at all times of the day, thus attaining satisfactory control of the diabetes. The finer adjustments of insulin effect are obtained by altering the size of the doses, by finding the best times at which to give them and by manipulating the distribution of the diet. In general there are no set rules of procedure in managing the difficult diabetic. The pattern of response to the previous treatment and a knowledge of the characteristic actions of the insulins are helpful, but finally it is a matter of trial. If the patient has been taking insulin once daily without success, do not change at once to another insulin. Use the present insulin twice a day, giving two-thirds of the previous daily dose before breakfast and one-third before tea. Further alterations in the insulin programme and in the diet are made, and only when these fail to control the diabetic should another insulin be tried. The whole business of juggling

with the new insulin is then repeated and may have to be repeated several times before the best arrangement of insulin or insulins is found.

The most successful plans have been the following. (i) Isophane insulin morning and evening. (ii) Isophane insulin and regular insulin (mixed) in the morning and isophane insulin in the evening. (iii) Insulin zinc suspension (lente) morning and evening. (iv) Globin insulin morning and evening. (v) Regular insulin, two, three or four times daily.

An attempt should always be made to manage the difficult diabetic on a morning and evening dose of insulin or insulins, and many of them can be so controlled. But if this arrangement fails there should be no hesitation in giving insulin more often to gain better control. Those most difficult of all difficult diabetics, the labile ones, are often best managed by regular insulin given several times a day. Some of them are satisfactorily controlled on an arrangement of longer-acting insulins if it includes regular insulin.

The difficult diabetics illustrate in striking fashion the influence of the individuality of the patient on the response to insulin. The variability of response is a fascinating field for study, for we know little or nothing about the factors involved.

Indications for Changing from One Insulin to Another.

A new insulin is a temptation to the physician and the patient. The physician may be persuaded by the favourable reports to change many of his diabetics to the new insulin. The patient may want to use it, believing it to contain some magic not in his present insulin.

A change of insulin should not be made lightly. There are two golden rules: (i) Never change a well controlled diabetic to a new insulin. (ii) Always change a poorly controlled diabetic to a new insulin.

The well controlled diabetic has nothing to gain and at times will lose by the change. The poorly controlled diabetic may gain much by the change and deserves the trial; often the control of the diabetes will be better with the new insulin; sometimes it is worse, and sometimes it is much the same as before. If control is worse the old insulin should be resumed; if it is the same either the old or the new insulin may be used, whichever is more convenient.

Some diabetics want to try the new insulin even though there is no compelling reason for a change. The physician should tell the patient that it is impossible to predict the response to the new insulin; the diabetes may or may not be as well controlled by it. If the patient then elects to change he should have the trial and abide by the outcome.

The actual changeover should be carefully supervised, for the physician cannot foretell the difficulties of the transfer. Usually the transfer is uneventful, but not infrequently the control of the diabetes temporarily worsens. This loss of control is usually mild, but sometimes it is severe. The dose of the new insulin may have to be raised rapidly and considerably above the dose of the previous insulin, and if the escape is severe, supplementary doses of regular insulin will be needed for a while until better control is reestablished. The details of transfer vary from patient to patient and also with the type of insulin previously used.

Can the Number of Insulins be Reduced?

To the question "Can the number of insulins be reduced?" the answer is "No", for the present and for a very considerable time to come.

Regular insulin is an essential insulin. Isophane insulin and insulin zinc suspension (lente) are first choice insulins for new diabetics. Amorphous insulin zinc suspension (semilente) and crystalline insulin zinc suspension (ultralente) are needed to make special mixtures with greater early or greater late action than insulin zinc suspension (lente). Protamine zinc insulin and globin insulin are no longer insulins of choice, yet they cannot be discontinued. Too many diabetics have been using them successfully for years and are still using them. It would be an impossible task to transfer all these patients to newer insulins. Even if it was possible, there is no certainty that all would be as well controlled on the new insulins; indeed, some would not. Protamine zinc insulin and globin insulin should not be chosen for new diabetics; yet at times they will succeed when the first-favoured insulins, isophane insulin and the insulin zinc suspensions, have failed.

The perfect insulin to suit all diabetics has not yet been discovered. There are always some diabetics who are best controlled by a particular insulin or particular combinations of insulins; no others suit as well. These diabetics should be able to obtain their proper insulins.

Confusing as it is to have so many insulins, the physician has to accept this situation and by wise choice and intelligent use overcome the difficulties.

Summary.

The properties of the various insulins have been described, and the fundamentals of their choice and use discussed rather than the details of treatment.

The insulins of the present and the immediate future are regular insulin, isophane insulin, and the insulin zinc suspensions. Protamine zinc insulin and globin insulin will be used less and less.

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THE TREATMENT OF ACTIVE CHRONIC INFECTIOUS HEPATITIS WITH ACTH (CORTICOTROPHIN) AND CORTISONE.

By P. M. LAST.[1]

From the Clinical Research Unit of the Royal Melbourne Hospital and the Walter and Eliza Hall Institute of Medical Research, Melbourne.

SEVERAL informative studies have been published on the use of ACTH (corticotrophin) and cortisone in acute infectious (viral) hepatitis (Evans *et alii*, 1953; Huber and Wiley, 1955). Sklar and Young (1955) have shown that these drugs are unsuccessful when used in the management of hepatic failure in advanced portal cirrhosis, and may in fact be harmful. The purpose of this report is to record their effects in the active chronic stage of the disease. A previous report from this unit (Saint *et alii*, 1953) reviewed 123 cases of infectious hepatitis. In their series there were 34 cases of active chronic infectious hepatitis of which 18 were fatal. As defined by Saint *et alii*, the term "active chronic infectious hepatitis" covers a group of patients with fairly well-defined clinical features, a highly characteristic pattern of biochemical findings, and a histological picture of the liver indicating active chronic inflammatory changes.

[1] Drug Houses of Australia Fellow.

Nine patients are included in this report, five males and four females, all of whom were treated in the Clinical Research Unit of the Walter and Eliza Hall Institute and the Royal Melbourne Hospital. The following methods of study were used.

Clinical Methods.

A detailed history was taken in all cases, including the assessment of diet by a qualified dietitian, a search for contact with infectious hepatitis, a history of injections and transfusions, and possible exposure to hepatotoxic agents. Complete physical examination was repeated at intervals, and the patients were weighed regularly.

Laboratory Methods.

At regular intervals the following biochemical estimations were performed: serum bilirubin content, cephalin flocculation, alkaline phosphatase content (in King-Armstrong units), and serum protein fractionation (including quantitative γ-globulin estimation as described by Weiden, 1953). The total serum lipids were estimated by the method of Kunkel *et alii* (1948), and the blood cholesterol content by that of Sackett (1925) and Kenny (1952).

Complete blood examination was performed in all cases on admission to hospital, and repeated from time to time. Prothrombin was measured by the one-stage Quick method, and the erythrocyte sedimentation rate by the method of Westergren. Other investigations were performed as indicated.

TABLE I.

Clinical Features.

Case Number; Patient's Sex and Age. (Years.)	Date of Onset.	Presenting Symptoms.	Initial Treatment.	Dates Hormone Therapy Started.	Interval After Onset. (Months.)	Duration of Hormone Therapy.	Clinical Response.	Result.
I. M., 31.	December, 1950.	Jaundice, bleeding hæmorrhoids.	Bed rest; diet; oxytetracycline (56 grammes); salt restriction and mercurial diuretics for ascites.	13.9.52 (ACTH). 1.10.52 (Cortisone). 30.6.54 (Cortisone).	21 22 42	3 weeks. 6 weeks. 24 months.	Improved appetite; œdema aggravated; jaundice, œdema and ascites subsided; continuing improvement; full-time work.	Excellent.
II. F., 44.	September, 1952.	Jaundice.	Bed rest, 6 weeks; 5 weeks later, relapse. Bed rest further 3 months; 20 months after onset, second relapse. Bed rest, 18 weeks.	September, 1954 (Cortisone).	24	24 months.	After 4 weeks relapsed, thereafter steady improvement.	Apparent recovery.
III. F., 20.	March, 1953.	Anorexia, jaundice, amenorrhœa.	Married just after onset. Bed rest, 2 weeks.	27.4.53 (ACTH). 13.6.53 (Cortisone).	1 3	6 weeks. 8 months.	Initial slight increase in jaundice. Spontaneous improvement since discontinuing cortisone.	No change.
IV. M., 28.	November, 1951.	Jaundice and diarrhœa.	Bed rest. Oxytetracycline (66 grammes).	27.4.53 (ACTH). 21.5.53 (Cortisone).	17 18	1 month. 42 months.	Prompt and sustained clinical improvement; full-time work. Hyperlipæmia.	Good.
V. F., 37.	August, 1954.	Jaundice preceded by arthralgia.	Bed rest. ACTH, 1 week, with no change. Oxytetracycline (6·0 grammes).	18.1.55 (Cortisone).	5	13 months.	Arthralgia and jaundice subsided.	Slight benefit.
VI. M., 16.	March, 1953.	Jaundice, epistaxes.	Bed rest.	27.5.53 (ACTH). 23.10.53 (Cortisone). 7.6.54 (Cortisone).	2 7 15	1 month. 14 weeks. 21 months.	Slight transient improvement — ? spontaneous. Persisting jaundice and lassitude. Relapsed 3 weeks after withdrawal of cortisone. Resumed work in August, 1955.	Doubtful benefit.
VII. M., 44.	May, 1953.	Jaundice and ascites.	Bed rest and diuretics. *Paracentesis abdominis.*	22.7.54 (Cortisone). 7.4.54 (Cortisone).	2 11	8 months. 4 months.	Prompt improvement. Relapsed after withdrawal. Prompt improvement. Rapid terminal deterioration.	Death; subjective benefit.
VIII. M., 22.	1947.	Jaundice.	Nil — apparent recovery. Recurring lassitude and jaundice.	23.3.54 (Cortisone).	34	5 months.	Initial improvement. Died in liver failure.	Death; no benefit.
IX. F., 45.	?	Hæmatemesis and melæna; found to have cirrhosis.	Transfusion; bed rest; diuretics.	27.5.53 (ACTH).	?	1 month.	Better response to diuretics; no other change.	Death; no benefit.

TABLE II.

Biochemical Findings Before the Institution of Hormone Therapy.

Case Number.	Date.	Serum Bilirubin Content. (Milligrammes per 100 Millilitres.)	Cephalin Flocculation (48 Hours).	Serum Albumin Content. (Grammes *per Centum*.)	Serum Globulin Content. (Grammes *per Centum*.)	Serum Gamma Globulin. (Grammes *per Centum*.)	Serum Alkaline Phosphatase Content. (King-Armstrong Units.)	Prothrombin. Percentage.	Erythrocyte Sedimentation Rate. (Millimetres in One Hour.)
	Normal values..	0·5	Nil or +	3·8 to 5·2	2·0 to 3·5	0·8 to 1·4	3 to 13	75	10
I	April, 1952.	8·0	++	2·9	3·9	2·15	24	78	—
II	January, 1955.	16·3	++	3·0	3·0	2·3	15	38	15
III	April, 1953.	10·0	+++	3·6	5·5	3·4	27	49	90
IV	January, 1952.	10·0	+++	3·8	4·2	2·1	18	72	—
V	October, 1954.	0·2	+++	4·6	4·4	2·8	13	100	79
VI	May, 1953.	25·0	+++	3·3	5·2	4·0	26	—	—
VII	July, 1953.	15·0	++	2·9	3·1	2·1	78	84	—
VIII	October, 1953.	26·0	++	3·2	3·8	3·0	86	91	84
IX	November, 1951.	3·0	+	2·8	2·9	1·9	27	40	—

Histological Methods.

In all except two cases, aspiration needle biopsy of the liver was performed before the institution of hormone therapy. Subsequent histological information was obtained by serial biopsies and at autopsy in the fatal cases.

Reports of Cases.

CASE I.—A., a railwayman, aged thirty-one years, insidiously developed severe lassitude and jaundice in December, 1950. Disabling symptoms persisted in spite of prolonged rest and a course of oxytetracycline ("Aureomycin"), and he could work only intermittently. Twenty-one months later he was readmitted to hospital in incipient liver failure, with deep jaundice, ascites and œdema. This responded to salt restriction and diuretics, after which he was given ACTH for three weeks, followed by cortisone for six weeks. Subjectively he rapidly improved and returned to work, but there was little change in the biochemical findings, and a liver biopsy two months after the start of treatment suggested a recrudescence of activity (Table III). Cortisone therapy was therefore discontinued. Jaundice did not recur, but he remained unwell, and nineteen months later, in June, 1954, cortisone therapy was resumed. There was prompt subjective benefit and gradual overall improvement in the biochemical findings. He has developed a grossly enlarged spleen, but there is no clinical evidence of hypersplenism or portal hypertension.

The over-all impression in this case is that cortisone has produced considerable benefit, and the patient now works long hours as a taxi-driver with no disability.

CASE II.—B., a housewife, aged forty-four years, developed typical infectious hepatitis in September, 1952. Jaundice subsided with rest, but recurred as soon as she got up, and it was three months before she seemed to have recovered. In March, 1954, the patient having been quite well for fourteen months, anorexia and jaundice recurred, and persisted in spite of strict rest for four months. Cortisone therapy was begun, with prompt benefit, but as soon as she was allowed up jaundice recurred. She was then admitted to this unit, mildly jaundiced and with an enlarged liver and spleen. There was biochemical and histological evidence of active chronic hepatitis (Tables II and III). Cortisone therapy was continued and she rapidly regained full appetite and strength. She has continued to have cortisone for eighteen months and remains well. The biochemical findings have returned to normal.

In spite of prolonged rest two relapses occurred before the institution of hormone therapy, and another soon afterwards. Since then, however, steady improvement has been maintained, and there is strong clinical and biochemical evidence that cortisone has been of great value to this patient.

CASE III.—C., a young woman, aged twenty years, was first examined in April, 1953, seven weeks after the onset of painless jaundice. She had had no previous attacks and did not look very ill, but there was biochemical and histological evidence of severe active chronic hepatitis (Tables II and III). She was given hormone therapy for ten months and maintained good health, complaining only of transient mild jaundice and amenorrhœa. Serial biochemical and histological examinations showed evidence of severe liver damage with no overall change. Cortisone therapy was discontinued in June, 1953, without incident, and she remained fairly well for two years. She then had an episode of ascites and œdema, which responded to salt restriction and the administration of diuretics. Hormone therapy was resumed (with prednisone) with some benefit.

Subsequently this patient has developed albuminuria and cylinduria, and a renal biopsy has revealed diffuse glomerular basement membrane thickening resembling

TABLE III.

Histological Findings.

Case Number.	Date.	Fibrosis.	Hepato-Cellular Damage.	Cellular Infiltration.	Hepato-Cellular Regeneration.
I	8. 4.52	+++	++	+	+
	6. 5.52	+++ (more severe)	++	++	+
	3.11.52	+++	+	++	+
II	25. 1.55	+++	+++	++	+++
III	16. 4.53	+	++	+++	+
	11. 6.53	++	+++	+++	++
	11. 2.54	+++	++	+++	++
	22.11.55	+++	+	++	++
IV	15. 1.52	+	+++	+++	+++
	12. 2.52	+++	++	++	+++
	4. 3.52	+++	+++	+++	+
	19. 8.52	+++	+	++	+++
	12.11.53	+++	+	++	++
	23. 8.55	++	+	+	++
V	3.11.54	++	+	++	+++
VI	18. 5.53	+	+++	+++	++
	25. 6.53	++	++	+++	+++
	13.10.53	+++	+++	++	+++
	18. 2.54	+++	+	+++	+++
VII	7. 7.53	+	++	+++	+++
	11. 9.53	++	+	+++	+++
	17.11.53	++	+	+++	+++
	25. 3.54	++	+	+++	+++
	10. 8.54	+++	+++	++	+
VIII	10.11.53	+	++	++	++
	23. 2.54	+++	+++	++	+++
	28. 8.54	+++	++++	+	+++
IX	20.11.51	++	+	++	+++

the changes seen in *lupus erythematosus*. Examinations for *lupus erythematosus* (L.E.) cells have given positive results, and these aspects have been discussed in detail by Mackay *et alii* (1956).

CASE IV.—D., a boat builder, aged twenty-eight years, was admitted to hospital in November, 1951, having been jaundiced for ten weeks. His liver was enlarged and there was evidence of active chronic hepatitis (Table II). In spite of prolonged rest and treatment with oxytetracycline, the condition appeared to progress. In view of persistent debility and biochemical and histological evidence of severe cirrhosis (Tables II and III), treatment with ACTH was begun in April, 1953, and followed by oral cortisone therapy for the rest of the period under review, now three and a half years. His appetite and energy promptly returned, with gain in weight, and there has been no further jaundice. However, nævi have increased in number, and in June, 1955, xanthelasmata appeared. His serum lipid content was then greatly elevated to 1560 milligrammes per 100 millilitres (normal range less than 650 milligrammes per 100 millilitres). The liver and spleen remain only slightly enlarged. In September, 1954, cortisone therapy was supplemented with vitamin B_{12}, 100 microgrammes per month, and oxytetracycline, one gramme per day for fourteen days in each month. No significant additional benefit has followed.

In this case hormone therapy produced considerable and sustained subjective benefit. There has been a little associated biochemical improvement but no significant histological change, and it is doubtful whether the hormone therapy has materially altered the course of the disease.

CASE V.—This case has been reported in greater detail by Joske and King (1955). E., a housewife, aged thirty-seven years, with clinical, biochemical and histological evidence of active chronic hepatitis (Tables II and III), was given cortisone five months after she first developed symptoms, primarily to relieve severe arthralgia. Jaundice subsided, and she resumed full activity, with corresponding improvement in the biochemical findings, which, however, remain abnormal. L.E. cell preparations have given positive findings in this case, which have persisted during treatment.

CASE VI.—F., a Dutch plasterer, aged sixteen years, was admitted to the unit in May, 1953, two months after the onset of severe infectious hepatitis. Intermittent courses of ACTH and cortisone (Table I) were associated with transient improvement, thought at the time to be coincidental. Three weeks after the withdrawal of cortisone a relapse occurred, with subsequent slow spontaneous improvement. He was still unable to work, and in June, 1954, after an interval of four months, and fifteen months after the onset, cortisone therapy was resumed. There was again transient subjective improvement; but anorexia, lassitude and slight jaundice persisted, and there was little change in the biochemical findings. In August, 1955, he was able to go back to work for the first time in two and a half years. He has now been taking cortisone continuously for over two years, but the slow improvement closely resembles the course in other severe cases in which no hormone therapy has been given.

CASE VII.—G., a Polish labourer, aged forty-four years, was first examined in July, 1953, seven weeks after first developing hepatitis. In spite of strict rest, jaundice had deepened, and he had developed œdema and ascites. There was a previous history of subnutrition while he was a prisoner of war, and of a moderately high alcoholic intake; but these factors were held to be of doubtful significance. Biochemical and histological findings (Tables II and III) confirmed the clinical diagnosis of severe active hepatitis. There was some response to continued rest, salt restriction and diuretics, but jaundice persisted. He was then given cortisone for eight months, with immediate clinical and biochemical improvement. He returned to heavy work, his only disability being transient jaundice after drinking small quantities of beer. However, serial biopsies showed increasing fibrosis and some fatty infiltration.

Within a week of cessation of cortisone therapy jaundice recurred, with associated mental deterioration, so it was resumed with prompt benefit. Although mild jaundice persisted, the patient stayed at work until four months later, when he suddenly developed ascites and passed into liver failure. This responded to energetic treatment; but he died a few days later from catastrophic intestinal hæmorrhage. Autopsy revealed an irregularly nodular and densely fibrotic liver, an enlarged spleen and moderate atrophy of the suprarenal cortex.

The patient in Case VII had severe infective hepatitis from the beginning, to which his previous subnutrition and mild alcoholism may have contributed. His illness lasted fifteen months, and he continued heavy physical work until three weeks before his death. The discrepancy between clinical and biochemical assessment should be noted, as well as the prompt relapse when cortisone therapy was discontinued.

CASE VIII.—H., a soil chemist, aged twenty-two years, developed lassitude and slight jaundice for a few weeks in 1947, for which he did not go to bed. During the next six years these symptoms frequently recurred, and when he was first admitted to the unit in November, 1953, he was slightly jaundiced and there were many cutaneous nævi; both liver and spleen were enlarged and firm. Biochemical and histological findings (Tables II and III) confirmed the presence of active chronic hepatitis. In the next three months his condition deteriorated, and a second liver biopsy showed more severe changes. Cortisone therapy was begun, with immediate clinical and biochemical improvement. However, three months later he developed diarrhœa, pain over his enlarged liver, mental deterioration, œdema and purpura. Jaundice deepened and he died in liver failure five months after first having cortisone. Autopsy confirmed the presence of severe hepatic fibrosis, and in spite of prolonged cortisone therapy there was no atrophy of the suprarenal cortex.

This patient was given cortisone when severe hepatic fibrosis had already developed. There was transient clinical improvement, but no change in the histological appearances. In spite of a dose which produced some "mooning" of the face there was no suprarenal atrophy.

CASE IX.—I., a female patient, was first admitted to the unit in July, 1951, with hæmatemesis and melæna. She was found to have active chronic hepatitis, which in the absence of any evidence of any other ætiology was thought to be viral, although she had never previously been jaundiced. She had no further serious bleeding, but developed jaundice, ascites and œdema, which persisted over the next eighteen months. In November, 1952, she underwent diagnostic laparotomy. There was gross cirrhosis with evidence of portal hypertension, and no extrahepatic biliary obstruction. Her condition continued to deteriorate, and in May, 1953, she was given ACTH for four weeks. There was an improved response to mercurial diuretics, but no other clinical change, and the biochemical findings suggested increased activity. Six months later she died in liver failure a few hours after *paracentesis abdominis*. At autopsy she was found to have had a shrunken, very fibrotic liver, an enlarged spleen, œsophageal varices and an acute duodenal ulcer.

In this case the pathogenesis of the cirrhosis remained a little obscure, but the probable cause was infectious hepatitis. The process appeared to have been more advanced than in the other cases, and this patient had the shortest course of hormone therapy (four weeks). This apparently produced a slight exacerbation and no subsequent benefit, and she died six months later.

Discussion.

In Victoria infectious hepatitis is now a very common disease. The population in 1954 was 2,480,000, and the annual notifications of infectious hepatitis have risen as follows:

1953: 491 cases.
1954: 1235 cases.
1955: 3776 cases.
1956: 2626 cases (first three-quarters only).

Nearly all these patients recover uneventfully, but a few pass into the active chronic stage of the disease as described by Saint *et alii* (1953). In the present series six of the nine cases meet these clinical, biochemical and histological criteria. However, in no case was there a history of intimate contact with infectious hepatitis or of possible exposure to serum hepatitis virus. Seven patients presented with jaundice, and three of these were admitted to the unit in what was thought to be the first attack. In Cases V and VII there was a history of previous subnutrition, in the former associated with contact with cordite, and in the latter with mild alcoholic excess. In their discussion of Case V, Joske and King (1955) considered that neither of these factors detracted from the probability that the primary disease was infectious hepatitis. The patient in Case IX presented with hæmatemesis and melæna, and was found to have cirrhosis of the liver; in the absence of any other cause, infectious hepatatis was presumed to be responsible.

Preliminary Treatment.

Before receiving ACTH or cortisone, all patients had had prolonged periods of rest in bed and adequate dietary intake of protein and vitamins under the supervision of a qualified dietitian. Three patients (Cases I, IV and V) had been given antibiotics of the tetracycline group. The patient in Case I received supplementary vitamin B_{12}, and in Case V the cortisone was preceded by a short course of ACTH for seven days, beginning six weeks after the onset of jaundice.

Hormone Therapy.

The decision to use hormone therapy was taken when there was evidence of continuing activity. Six patients were first given ACTH, and five of these and the remaining four subsequently had cortisone (Table I). The duration of hormone therapy ranged from four weeks in Case IX to three and a half years in Case IV.

ACTH was administered to four patients by intermittent intramuscular injection, to a total dosage ranging from 2·08 to 3·0 grammes given in three to six weeks. Cortisone was given orally in a dose adjusted according to the clinical response, and averaging 50 milligrammes daily. Hydrocortisone and the newer adrenal cortical hormones were not used during the period under review.

Clinical Response to Hormone Therapy.

The patient in Case IX was given a short course of ACTH when she had advanced cirrhosis with ascites and œdema. The only clinical result was a slightly better response to mercurial diuretics, after which she continued her steady downhill course. Since there is some doubt about the ætiology and the degree of activity, this case will be excluded from the subsequent discussion. In all the remaining eight cases hormone therapy produced prompt clinical improvement, varying from increased appetite to subsidence of jaundice, œdema and ascites. One patient (Case II) showed quite dramatic improvement, and after a transient minor relapse this has been sustained for two years. Two other patients (Cases I and IV), who have received cortisone for the longest periods, have remained in fairly good health and have continued working. The patient in Case VI has shown little benefit, and in Case III the patient maintained better general health in the two years after the cessation of hormone therapy than during the ten months in which she received it. Later developments in this case have been discussed by Mackay *et alii* (1956). Cortisone was given in Case V primarily to relieve arthralgia; however, emotional factors render symptomatic assessment difficult. In Cases VII and VIII hormone therapy failed to halt the progress of the disease, although initially the patients seemed to do well.

Thus, of the eight patients under review, one (Case II) has shown an excellent response, two (Cases I and IV) have shown moderate improvement, and the remaining five little symptomatic change. In no case has there been any convincing evidence that hormone therapy has been harmful.

The danger of suddenly stopping cortisone therapy should be stressed. In Case VII this precipitated early liver failure. The patient in Case VI, who showed little change when first given cortisone, relapsed three weeks after its withdrawal. Other patients in this series have suffered no ill effects when cortisone was stopped.

Biochemical Assessment.

In assessing progress we have found the most useful biochemical criteria to be the serum protein pattern, particularly the level of γ-globulin, and the level of serum bilirubin. With the exception of Case IX, hormone therapy produced a fall in serum bilirubin level, usually gradual, and reaching normal in five of the eight cases. In two cases the γ-globulin level fell to normal limits, and in the other cases it remained elevated. In Case III the level was stationary at 3·4 grammes *per centum* throughout the period of hormone therapy. Two years later it had fallen to 2·3 grammes *per centum*, indicating spontaneous improvement, and this was reflected clinically and histologically. In Case VI the patient received ACTH two months after the onset of acute hepatitis, and he has subsequently had two courses of cortisone. The serum bilirubin content fell, although not quite to normal levels, and the γ-globulin level, after an initial rise, fell slightly, although it still remained grossly elevated.

In all cases the pattern of biochemical findings has afforded an interesting and useful parallel with the clinical progress and the histological changes, as described by Saint *et alii* (1953). However, no biochemical changes could confidently be attributed to hormone therapy *per se*.

Histological Assessment (Table III).

With the exception of Case V, histological information was obtained after the institution of hormone therapy—in three cases at autopsy, and in one of these and in the other five surviving patients by liver biopsy. The interval after the commencement of treatment varied from four weeks to two and a half years, and four patients have had serial biopsies. No dramatic changes occurred in any case, and in general the appearances altered very little. In Case I some exacerbation in activity appeared to have been produced by ACTH, but clinically and biochemically there is strong evidence that this later subsided. In the three fatal cases there was no evidence that the histological appearances had been modified by hormone therapy. Unfortunately in Case II, in which such striking clinical and biochemical improvement has occurred, no further histological information has been obtained. In Case III the patient, while on cortisone, passed through a minor phase of hepatic insufficiency after a liver biopsy. This phenomenon is well known after other procedures, such as *paracentesis abdominis* (Sherlock, 1955) and laparotomy. This has also been our experience in other cases in which hormone therapy was not being given. The temporary relapse in Case III was not considered to be due to cortisone administration.

The Lupus Erythematosus Cell (L.E. Cell) Phenomenon.

The occurrence of the L.E. cell phenomenon in association with hepatitis was first reported from this unit by Joske and King (1955) in Cases III and V. Further studies have recently been reported by Mackay *et alii* (1956), who suggested that these patients showed sufficient features in common to favour the term "lupoid hepatitis". The administration of cortisone in the present series is in accord with their concept.

Conclusion.

In the State of Victoria acute infectious hepatitis is a common disease. Most patients make an uneventful recovery, but a few pass into the active chronic phase of the disease. It would appear that this group would derive at least symptomatic benefit from cortisone; but the results in this small series emphasize that dramatic recoveries cannot be expected. A controlled study would give better information on this problem.

In this series of nine patients, hormone therapy produced varying subjective benefit, some improvement in the biochemical estimations of liver function, but little change in the histological appearances.

Summary.

1. The therapeutic effects of prolonged treatment with ACTH (corticotrophin) and cortisone have been studied in nine cases of active chronic hepatitis. This hormone therapy was administered for periods ranging from one month to three years. One patient appears to have completely recovered, two have shown moderate improvement, and three have shown little or no benefit. Three patients died, but two of them improved subjectively while having hormone therapy.

2. The diagnostic criteria and clinical, biochemical and histological methods of study and assessment have been used as defined by Saint *et alii* (1953).

3. With the exception of one case of severe cirrhosis, all patients showed prompt symptomatic improvement, which was not always sustained. No patient appears to have been made worse by hormone therapy.

4. In seven cases histological material was obtained before the institution of hormone therapy, and in eight cases subsequently by serial liver biopsy and at autopsy in the three fatal cases. In one case liver biopsy indicated transient increase in activity, but in the rest no significant histological change could be attributed to hormone therapy.

5. Sudden withdrawal of cortisone may precipitate acute relapse, even though the drug appears to have been producing very little effect.

6. It is concluded that in the treatment of active chronic infective hepatitis, ACTH and cortisone may produce varying subjective benefit, some improvement in the biochemical findings relating to liver function, but no significant histological change.

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NUTRITION IN THE ANTARCTIC.[1]

By P. G. LAW, M.Sc., F.Inst.P., F.R.G.S.,

Director of the Antarctic Division, Department of External Affairs, Melbourne.

THERE are five things that are of fundamental importance in an antarctic expedition—good nutrition, adequate shelter, suitable clothing, efficient transport, and friendly relations between the men.

As each of these subjects is broad enough to require a lecture to itself, I shall here discuss only one of them—nutrition.

Captain James Cook, the first explorer to circumnavigate the Antarctic continent, was one of the first men to realize the importance of diet in preventing outbreaks of scurvy on long sea voyages. In 1776 Cook published a paper in the *Transactions of the Royal Society*, "The Method for Preserving the Health of the Crew of H.M.S. the 'Resolution' during her Late Voyage Round the World", in which he tells of the measures he took:

> We had on board a large quantity of Malt of which was made sweet-wort and given (not only to those men who had manifest symptoms of the scurvy) but to such also as were, from circumstances, judged to be most liable to that disorder. . . .

Sauerkraut, lemons and oranges and "Portable Soup or Broth" (probably one of the forerunners of "Bovril" and "Marmite") were also used.

When explorers at the beginning of this century first began to explore the surface of the Antarctic continent, food and nutrition immediately became one of their most urgent considerations. Around the shores of Antarctica in summer they could find seals and birds, but in winter they had to rely on stocks of food collected and stored from the previous summer or specially carried by ship from temperate countries. If these men wished to travel inland, all their food had to be carried with them.

Since that time all antarctic explorers have been faced with two problems in nutrition—the feeding of their men at base and the provision of food for journeys of exploration.

If a man takes part in an exploring journey in the field, he lives "tough", he expects it to be tough, and he gets a certain measure of satisfaction from enduring the tough circumstances. He will therefore tolerate and even enjoy a basic "hard" ration which the man at base will not accept. The man at base, you see, is living practically a normal routine life for twelve months. He rises at a regular hour, shaves and washes, has breakfast, goes to the office and so on, day after day. However, he has few of the social amenities of a civilized community and one of the few pleasures remaining to him, apart from satisfaction in the work he is doing, is the enjoyment of food. For that reason I believe he is entitled to the best food that we can give him.

The diet at an Antarctic base, though it can sometimes be supplemented by fresh seal or penguin meat, must consist almost entirely of preserved foods. What are the requirements for these? (i) They must keep well (they may have to be stored for several years). (ii) They must possess a wide variety and be preserved in as many ways as possible (dried, salted, canned, dehydrated or vacuum-packed). (iii) They must be of high quality, not only from a nutritional but also from a culinary point of view.

Now, as refrigeration space on expedition ships is limited, the meat supplied is mainly tinned, and one grows very tired of tinned meat after a few months. Meat is undoubtedly the poorest of all tinned foods. However, in summer, seals, penguins and birds make excellent eating provided that one can overcome repugnance, prejudice or other psychologically inhibiting factors. (Some of these animals have natural habits that are far from attractive.)

I found that, in the beginning, our men[1] at Heard Island and Macquarie Island would not eat the local game. The reason mostly was sheer prejudice. I therefore made a point of deliberately indoctrinating the men before their departure, pointing out the advantages of fresh over tinned meats, describing how luscious were such items as roast penguin breast or fried seal's liver or crumbed brains, and even hinting very broadly that any man who cavilled at eating such things was "a bit of a sissy" and not a worthy expedition member. The result was that practically all of them ate the local meats and much preferred them to the tinned products. (It is interesting to remember that the Norwegian explorer Stefansson (1921) lived for seven years in the Arctic on a diet consisting only of fresh meat and fish. He proved that such a diet will supply the essential vitamins.)

There are problems, of course, involved in transferring tinned and fresh foods from Melbourne to Antarctica. Liquids in bottles burst the bottles if they freeze, so we pack wet products in tins when possible. Dried or powdered foods are preferred if available. Fresh potatoes, onions, oranges, eggs, bacon, and some fresh meat are provided,

[1] The Annie B. Cunning Lecture on Nutrition, delivered on October 11, 1956, at a meeting of The Royal Australasian College of Physicians at Melbourne.

[1] The men of the Australian National Antarctic Research Expeditions (A.N.A.R.E.).

but care must be taken to keep the vegetables and fruits in a warm compartment on the ship to prevent their freezing. When unloaded ashore they are allowed to freeze, but they must be used the first time they thaw. Eggs which freeze and crack become dehydrated. Solid tinned meats keep well, but stewed steak, sausages, salmon and sardines suffer some deterioration in texture and consistency after freezing. The following tinned products deteriorate so much in texture as to be unsuitable, and we have stopped buying them: cream, "meat and vegetables", unsweetened condensed milk, asparagus, creamed corn, green peas, cauliflower, potatoes, carrots, whole tomatoes. (See Kefford, 1956.)

We provide vitamin pills at our stations. Some men take them—many do not bother. We have had no evident case of vitamin deficiency. However, in the field, living on a sledge ration, men all take their vitamin pills.

We find that our men tend to put on weight rather than lose it. They are healthier in general than they are in Australia, provided always that the team is a reasonably happy one and that no atmosphere of tension and strain exists in the party. Occasionally men overwork and return somewhat jaded and exhausted, and when personal relations between the members of a party are not harmonious the digestive organs are generally the first to register the fact. Indigestion, gall-bladder trouble, appendicitis, neurotic stomach troubles—these are the principal ills of an antarctic party. One French party reported an excessive amount of rheumatic troubles; but I wonder whether this may not have been due to a regularly higher alcohol consumption in addition to the climatic conditions, for we have not experienced it.

The foods used on Antarctic field trips must satisfy different requirements from those used at base. These are as follows: (i) Rations should be standardized for simplicity. (ii) They should be light (no more than two pounds per man per day) and have a high calorific value. (iii) They should have a low volume (for example, powders and concentrates). (iv) They should be easy to prepare and not need much cooking. (Fuel is always scarce in the field.) (v) They must be palatable and easily digested. (vi) They must be packed in strong, waterproof and light containers, and must be made up in multiples of man-day quantities which can be easily subdivided.

Some rations which have been devised are shown in Table I.

Aside from the aeroplane, there are three methods of transport available in the Antarctic, each of which makes different demands on men's stamina and resistance. Hand sledging, for which Scott's ration was designed, involves fearful exertion, and his calorific value of 4800 was probably insufficient. Sledging with dogs, for which the F.I.D.S. ration was designed, involves far less exertion, and travel by "weasels" even less again. The A.N.A.R.E. ration pack is a compromise, designed for use with either dogs or "weasels", but all A.N.A.R.E. parties have found it in excess of their needs when travelling by weasel.

Several points about these rations are worthy of comment. First, it will be noted that instead of the 1:1:4 ratio for protein, fat and carbohydrate which is quoted on ordinary diet charts, we have more protein and fat and less carbohydrate, ratios being about 1:1·5:1·75.

I believe that a diet of high protein content is of value. We tried one year to study this question of a protein-rich diet, but did not obtain conclusive results. However, we proved that such a diet was not harmful. In this we differ from Burton and Edholm (1955), who, in their book "Man in a Cold Environment", state that experiments have proved a protein-rich diet to be unsatisfactory.

The question of fat is a controversial one. A recent survey of cold in relation to nutrition by a French doctor, J. Rivolier (1955), who accompanied a French Antarctic expedition, quotes a mass of conflicting evidence on this and on other points, derived from laboratory and field experiments with men and animals. He, and also Burton and Edholm, cautiously deduce that a diet of high fat content provides more protection against cold than a carbohydrate-rich diet. Our figures would appear to bear this out.

However, I am not convinced that the fat content of our antarctic ration is appreciably higher than that of the diet of many of the men before they leave Australia. I believe that most people possess a well-defined fat tolerance which they cannot exceed, and that this does not increase if they go to Antarctica. If they eat more fat than they can tolerate, they either become nauseated or they simply excrete the excess. (It is interesting to note that excess fat gives our husky dogs diarrhœa—they have a lower fat tolerance than human beings.) The fact that Eskimos have a high fat intake is beside the point; this is the result of adaptation to a certain environment over many centuries, and is not the result of short-term acclimatization, which is what we are concerned with in our men.

We and a number of other expeditions initially provided a high fat content in field rations, only to find that the field parties could not eat all the butter provided. An interesting experiment in our ration is the inclusion of egg powder. This has raised both the fat and protein content, and the egg fat, being in a more emulsified form, seems to be more acceptable when taken in addition to an already fat-rich diet than butter or meat fats would be.

TABLE I.

Daily Sledging Rations Used by Antarctic Expeditions (Ounces).

Item.	Scott (1911).	F.I.D.S.[1] (1948).	A.N.A.R.E. (1956).
Pemmican ..	12·0	5·6	8·0
Butter	2·0	4·8	4·0
Biscuit	16·0	3·8	5·0
Rolled oats ..	—	2·5	2·0
Sugar	3·0	3·2	4·0
Milk powder ..	—	1·6	2·5
Potato powder ..	—	0·8	1·5
Onion powder ..	—	0·4	0·3
Egg powder ..	—	—	1·0
Pea flour	—	0·8	—
Chocolate ..	—	2·4	2·0
Vegetable extract	—	0·2	0·2
Salt	—	—	0·2
Tea	0·7	0·4	—
Coffee	—	0·2	0·3
Cocoa	0·6	—	1·0
Vitamin tablets ..	—	Vitamin *C*, nicotinic acid, thiamine, riboflavin.	Vitamin *C* and "Multivite" tablets.
Total weight ..	34·3	27·5	32·0
Protein (grammes)	220·0	115·0	190·0
Fat (grammes) ..	235·0	250·0	290·0
Carbohydrate (grammes) ..	455·0	300·0	320·0
Protein : fat : carbohydrate ratio ..	1:1·1:2·1	1:2·2:2·6	1:1·5:1·7
Calories	4800	4070	4830

[1] Falkland Islands Dependencies Survey (British).

The increased intake of sugar is the most striking feature of our experience in Antarctica, and this applies to men at the station as well as in the field. In our first year we grossly underestimated the requirements of our men in this respect. They apparently require a source of heat and energy which is easily and rapidly assimilated, and it is noticeable that they develop cravings for sweet things, but never for fatty things.

Dr. V. Fuchs (1952), writing about the F.I.D.S. field ration, made these points:

> All men when dog sledging felt hungry, particularly in the early stages of a journey, when the stomach had not adjusted itself to the reduced bulk of food. However, they sledged for 1000 miles in 90 days without loss of condition or deterioration in general health.
>
> When "lying-up" in bad weather men became hungrier than when sledging, because self-discipline was more difficult within easy reach of the food bags and men had more free time in which to think about food.

TABLE II.

Antarctic Transport.

Type of Transport.	Weight Able to be Transported.	Number of Days Possible in Field.	Average Miles Possible per Day.	Maximum Number of Miles Possible in Field.	Probable Number of Miles Possible. (Travel only Two Days out of Three.)
Man hauling (3 men) ..	400 pounds (6 pounds a day of men's food).	30	15 to 20	540	360
Dog sledging (3 men) ..	2400 pounds (50 pounds a day of dog's food; 6 pounds a day of men's food).	40	20 to 30	1000	750
Weasel (3 men)	4480 pounds (240 pounds a day of petrol; 6 pounds a day of men's food).	18	40 to 80	1080	1000

Eskimos have been shown to have a higher basal metabolic rate than Europeans. The basal metabolic rate of a European does not increase as he becomes acclimatized to the cold. The amount of food he eats increases, and so does his total heat production. Acclimatization to cold does not apparently enable the body to use fuel more efficiently—it merely permits the body to take in and burn up greater amounts of fuel to produce the increased energy required.

An idea of the relative weights carried and the distances travelled by the various methods of polar transport is given in Table II.

If the number of vehicles is increased, these distances can be increased. Further time in the field can also be gained by the preliminary laying of depots.

When you consider that a "weasel" does not consume fuel when not travelling (whereas men and dogs must eat), and when you consider that for every seven days of travel one must expect to be immobilized by bad weather for two or three, you can see that the mechanized form of transport will take you furthest in the shortest time. It also possesses the advantage that small objects are insignificant in relation to the total weight transported, and one can therefore carry a few luxury foods and personal belongings which would be excluded if one was travelling by sledge.

Some figures taken from journeys undertaken during the last fifty years are set out in Table III.

The interesting point is the great distances that can be covered by sledges when the men driving them are prepared to face the discomforts and boredom of this means of travel.

There have been various attempts to assess the reasons for the Scott disaster. It would seem that overriding the questions of bad luck, very bad weather and physical exhaustion was the matter of some basic lack in the diet of the men.

Captain Evans, in "South with Scott', recalls that on Christmas Day, 1911, his team and Scott's "swung southwards, keeping step, and with every appearance of perfect health. But a close observer, a man trained to watch over men's health, over athletes training perhaps, would have seen something amiss. The two teams . . . soon lost their springy step, the sledges dragged more slowly".

Cherry Garrard, in "The Worst Journey in the World", also refers to the mystery of Scott's team losing condition so suddenly. He writes:

> This team, which had gone so strongly up the glacier, which had done those amazingly good marches on the plateau, broke up unexpectedly and in some respects rapidly from the 88th parallel onwards.

T. Gordon Hayes (1928), in "Antarctica", suggests that Scott's diet, not only on the polar journey, but also at his base at Cape Evans, was deficient in vitamins. He points out that the diet at a winter station is just as important as the diet provided in the field, and cites Dr. Macklin, medical officer of Shackleton's expedition, who believed that Scott's party was suffering from scurvy over the last stages of the journey. Sir Raymond Priestley (1956), in his presidential address to the British Association at Sheffield, said that scurvy was the main reason for the failure of Scott's party to return safely.

Besides its vitamin deficiency, Scott's sledging ration was also probably deficient in calories. Its calorific value of 4800 was probably too low for the needs of men living for five months exposed to extreme cold and dragging sledge weights of about 200 pounds a man. (It has been estimated that at very low temperatures, say −40° F., one-half of the food intake is required to maintain the body at its normal temperature.)

All sledging rations are, of course, designed to meet the average daily needs of expedition men. In practice, however, men's needs vary—according to their weight and build, their different metabolic rates, their degree of acclimatization, and so on. In the Scott tragedy the first man to fail was the biggest and bulkiest, who would require the largest fuel allowance. (However, psychological factors enter into this case, for as Sir Raymond Priestley said at Sheffield: "Seaman Evans [an Able Seaman in a team of three naval officers and a doctor] was in a thought-tight compartment by himself and was naturally the first to break.")

TABLE III.

Antarctic Journeys.

Explorer.	Distance of Journey in Miles.	Time of Journey in Days.	Number of Men.	Transport.
Shackleton	1760	124	4	Hand sledges.
Scott	1640	150	5	Hand sledges and ponies.
Amundsen	1740	99	5	Dog sledges.
Fuchs (F.I.D.S.) ..	1080	90	6	Dog sledges.
Roots (N.B.S.)[1] ..	500	8	6	Weasels.
Roots (N.B.S.)	150	29	3	Dog sledges.
Dovers (A.N.A.R.E.) ..	550	41	2	Dog sledges.
Dovers (A.N.A.R.E.) ..	360	25	3	Weasels.
Bechervaise (A.N.A.R.E.)	550	23	7	Weasels.

[1] Norwegian-British-Swedish Antarctic Expedition, 1950–1952.

It is interesting to compare the food requirements of antarctic expeditions with those of mountaineering expeditions. It is like comparing the requirements of long-distance runners with those of sprinters.

Mountaineering expeditions in the past have worried about keeping the diet balanced, and have taken all kinds of fancy foods up to great heights to tantalize the palate and promote the appetite to enable men to eat their proper amount of carbohydrate, protein and fat. Always it has been found that men on these expeditions lose their appetites during the last stages, and that they lose their appetites for fancy foods far sooner than for basic simple foods.

The recent British Mount Everest expedition found that the men doing the hard work beyond Camp 6 wanted only two things—water and sugar. Solid foods were not readily taken. They existed mainly upon sweetened drinks. Now, is this very remarkable? Is not this what we have all experienced after a heavy afternoon of six sets of tennis

on a warm day? Basically you come down to this: in the final assault stage men do not need protein (they can burn up tissue, grow lean and lose weight, and rely on rebuilding it later on); they cannot tolerate fat; they are too thirsty to chew carbohydrate. They need energy and can obtain this most rapidly from sugar. Also, because they have sweated and have, by heavy breathing, evaporated water from their lungs, they are in a dehydrated condition and they need water. Six pints a day seems to be the minimum requirement. Attention to this basic and elementary reasoning would have saved the porters of earlier expeditions a lot of carrying.

Now for the question of simple foods. There is no doubt that, if you are eating a ration which must be restricted in its variety because of weight or space limitations, you can eat simple foods indefinitely without tiring of them. The Australian soldier in New Guinea eating bully beef and biscuits was not so badly off as you would think; the antarctic explorer eating porridge for breakfast and pemmican for dinner every day for three months enjoys his meals and looks forward to them quite avidly. Oatmeal, plain meat, plain biscuits, butter, sugar—these will keep you going for a remarkably long time.

There is a wide field of medical research in antarctic expeditions which is awaiting attention. I have mentioned some things that I believe to be right, but I cannot quote figures to prove them. I should like to see controlled, statistically sound experiments carried out to determine what is the best balance of protein, fat and carbohydrate for men in our expeditions engaged on jobs of various levels of activity. What is meant by acclimatization to extreme cold, and how does it affect a man's assimilation and tolerance of certain types of foods? What effects have psychological factors on assimilation problems? Do vitamins play an important part in acclimatization or do they merely continue their normal dietary role? Frostbite and deep freezing of tissue are subjects imperfectly understood, and medical opinion is far from unanimous concerning the best methods of treatment. What is the physiology of exhaustion? What are the effects of psychological factors in what is vaguely classed as "death from exposure"?

It is obvious that laboratory-type experiments, in which single aspects of these various problems are investigated in cold-room environments, produce conflicting—even misleading—results. A study of Rivolier's paper shows this clearly, as well as the lack of agreement between many experiments performed in the field. The problems are difficult because they are all interrelated, and man in a cold environment, as in an antarctic expedition, must be studied with all the impinging conditions operating.

No doubt the research carried out in Antarctica during the International Geophysical Year will throw some light on these questions, and it is important that immediate progress be made, for the development and exploitation of this last great unknown continent will be dependent to some extent upon the results of such work.

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Reports of Cases.

HEADACHE OF THE MIGRAINE AND ALLIED TYPES: A NEW APPROACH.

By CECIL B. MADDERN, D.D.Sc. (Adelaide), F.D.S.R.C.S. (Edinburgh),

Adelaide.

MIGRAINE, or "megrim" as it used to be called, is a corruption of the word "hemicrania" meaning "half skull", and this term refers to the fact that the headache usually starts on one side of the head. The headache, of a throbbing kind, is usually accompanied by nausea and vomiting—the so-called "sick headache". In more severe attacks there may occur certain disturbances of eyesight. The attack may often commence on waking and may last a few hours or all day.

According to Wolff (1948), a relatively small percentage of headaches result from ominous lesions within the cranium. The pain-sensitive vascular and muscular tissues about the head, face and neck, and to a lesser extent the mucosa of the upper nasal passages, are the source of more than 90% of headaches.

The aetiology of the condition is admitted to be obscure, and the literature, which is voluminous, is confusing. Most contributions deal with the action of agents, the use of which is to raise the pain threshold, to alter the reaction to pain, or to stimulate the tone of the extracranial arteries.

A survey of the literature fails to reveal that aberrations of the masticatory mechanism have ever been considered as a vital causative factor or could constitute the initial action in causality.

The writer submits the thesis that the dental system is, physiologically, an active protective system, because the phenomenon of physiological adaptation by means of progressive attrition ensures planar distribution of stress throughout the cranium; and that when such adaptation does not take place, stress, associated with the eccentrically and overloaded structures, disturbs the hydrodynamic equilibrium of the vessels within the affected area, and the resulting dilatation and distension of the vessels are responsible for the pain.

Four selected case histories are discussed. These have been chosen in order to give a representative cross-section of the many cases which have come under the attention of the writer.

No attempt has been made to deal with the headache associated with the edentulous patient, as this would render the contribution too cumbrous.

CLINICAL RECORDS.

CASE I.—Mrs. P., aged forty years, was a very cooperative patient, and a migraine sufferer for years. The pain, always on the left side, invariably started in the malar region, extending to the left frontal sinus and orbit, and was frequently of such severity as to lead to complete prostration. Although running a successful business in the Midlands of England, she and her husband decided to come to Australia in the hope that the Australian sunshine and the warm climate would diminish the severity of the attacks. Her dental notation was $\frac{32 \mid 13457}{54321 \mid 12345}$ with a partial upper denture *in situ*. Although all the lower molars had been lost, no lower denture had been worn. The $\underline{\mid 2}$ had been lost as a child, the $\underline{\mid 1}$ and $\underline{\mid 3}$ were in proximal contact. Radiographs revealed marginal alveolar absorption throughout the jaws, and $\underline{\mid 5}$ with periapical membranous thickening. Clinically $\underline{\mid 5}$ was slightly mobile.

The impact of occlusal force was concentrated on the left side in the region $\frac{\mid 345}{\mid 34}$, and, owing to the absence of teeth elsewhere in both maxilla and mandible, this area represented the sole area of occlusal efficiency. The overload which resulted from this concentration of force would account for the alveolar and membranous degenerative changes. The stresses arising from this overload would be distributed and effective throughout those areas that correspond to where the migraine headache had occurred—that is, the left frontal and malar regions.

It was reasoned that the conditions of physical equilibrium would be restored by complete exodontia, followed by the construction of prostheses designed to establish conditions of uniform distribution of force. This was carried out, and a space of three weeks elapsed before the prostheses were inserted, as it was considered that such a period of time would be sufficient to allow the overloaded structures to return to conditions of rest.

FIGURE I.

Occlusal view of senile specimen, which shows uniform degradation of energy. (Australian aboriginal.)

From within a week of the operation, and for the past two years, the patient has been free from migraine. A return of the symptoms, in a mild form, has occurred when the patient has become over-fatigued.

Mr. F., aged thirty-two years, was referred because of headaches of migraine type on the right side in the supra-orbital region. His dental notation was $\frac{6\ 4321\ |\ 1\ 34}{6\ 4321\ |\ 12345\ 7}$. A bridge with a mesial occlusal inlay on $\overline{6}|$ and a mesial occlusal distal inlay on $\overline{4}|$ replaced the $\overline{5}|$.

FIGURE II.

Lateral view of senile specimen, which shows uniform degradation of energy. (Australian aboriginal.)

The case was interesting in that it is typical of a group of cases encountered very frequently. The $|\underline{2}$ had been extracted during childhood because it was prominent and was lost at the time when $|\underline{3}$ was erupting. The $|\underline{1}$ and $|\underline{3}$ were contiguous. No attempt had been made to replace the lost upper left molar teeth.

The impact of occlusal force was concentrated on the right side, and in particular in the $\frac{6\ 43}{64}|$ region. This was due to the loss of teeth on the left side, and also to the metal surface of the bridge ($\overline{64}|$). The contouring of this metal prosthesis had very effectively locked the occlusion, and the only masticatory movement possible was limited to the right side.

It was reasoned that treatment directed towards (*a*) eliminating the restraints impeding the free motion of the mandible, and

FIGURE III.

Occlusal view of lower jaw of subject in Figures I and II, showing uniform attrition in the horizontal plane. The antero-posterior curvature of the attritional plane is bilaterally symmetrical.

(*b*) increasing the occlusal surface area with a partial upper denture, would relieve the eccentric loading on the right side (and thus the area of distribution corresponding to the region of the migraine).

The patient was freed from migraine. The only recurrence was associated with a "hangover" following injudicious revelling.

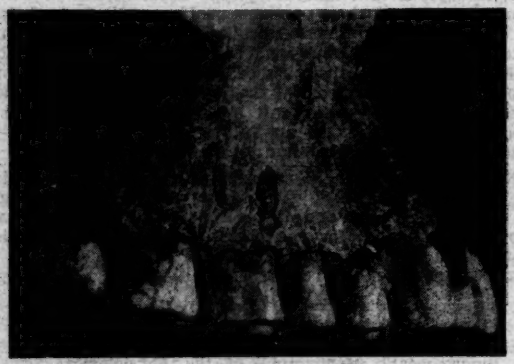

FIGURE IV.

Occlusal view of upper jaw of subject in Figure III, showing uniform attrition in the horizontal plane. The antero-posterior curvature of the attritional plane is bilaterally symmetrical.

CASE III.—Mr. B., aged twenty-eight years, had for five years attempted to obtain relief from headaches which were so severe as to cause "blackouts" and epileptiform seizures. The tentative diagnosis was "idiopathic epilepsy possibly of psychological origin". The patient was unable to work because of uncertain and periodic bouts of insensibility. X-ray examinations of his sinuses and brain had failed to reveal any pathological entity.

The dental notation was $\frac{8\quad 4321\,|\,1\ 3\ 5}{8\quad 21\,|\,123\quad 8}$. The $|\underline{3}$ acted as the abutment of a bridge carrying $|\underline{2}$ and $|\underline{4}$, and a partial lower denture was being worn. The only area of occlusal impact was $\frac{|3}{|\underline{3}}$. This was due to a forward drift of

FIGURE V.

Lateral view of the lower jaw of the same subject, showing uniform attrition in the horizontal plane. The antero-posterior curvature of the attritional plane is bilaterally symmetrical.

$\underline{8}|$, and also to the fact that the metal projection which comprised the bridge on $|\underline{3}$ mentioned above was so massive as to preclude any other area of contact. Inquiries revealed that the "heads" initially had been on the left side extending over the left frontal sinus and left orbit. X-ray films revealed $\underline{1}|$ to have an apical membranous thickening, and that the

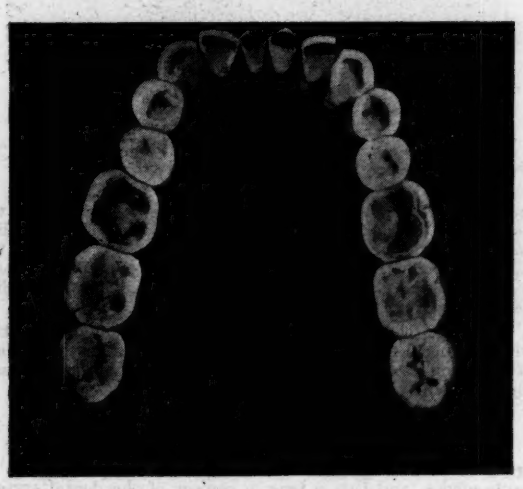

FIGURE VI.

Occlusal view of specimen. Note the antero-posterior curvature and the bilateral reciprocal adaptation.

root of $|\underline{3}$ was curved. The bridge abutment ($|\underline{3}$) was vital, and the use of a three-quarter crown had been the procedure adopted to carry the dummies.

That the only area of occlusal impact was on a metal projection on $|\underline{3}$, and that so many teeth had been lost elsewhere, suggested the possibility that this eccentric overload might have been the initial factor in this unusual case. The recommendation was made that all the upper teeth be removed, as it was reasoned that all stresses would thereby be abolished, and conditions of physical equilibrium established, both to the alveolar bone, and to the areas of distribution throughout the skeletal framework of the head.

The upper teeth were removed under local anæsthesia. The operation proved a very lengthy one, as the alveolar bone was extremely indurated, especially that around $|\underline{3}$. Subsequently artificial prostheses were constructed.

There has been only one recurrence of the condition in the two and a half years following the operation. This was of a minor nature, and had been preceded by circumstances which made the patient in a very distressed state of mind.

CASE IV.—Mrs. R., aged twenty-three years, was referred with severe headaches of more than two years' duration. On the right side of the head, the temporal and right frontal sinus regions were the areas involved. The severity of the attacks was becoming more intense, and the patient was frequently prostrated. The right orbit was also involved, the vision being affected during the attacks.

The dental notation was $\frac{87\ 5\ 321\,|\,123\ 5678}{8\ 65\ 321\,|\,1234\quad 78}$. It was noticeable that although $\underline{64}\,|\,\underline{4}$ had been extracted in the upper jaw, the remaining teeth had migrated, and the gaps had closed up,

FIGURE VII.

Lateral view of the specimen in Figure VI. Note the antero-posterior curvature and the bilateral reciprocal adaptation.

all the teeth being contiguous. In the mandible $\overline{8}|$ had tilted forward; but on the left side a gap did exist between $|\overline{4}$ and $|\overline{7}$. The absence of any stains gave the impression of "perfect" teeth. Æsthetically, and from the customary and recognized method of examination, no pathological lesion was evident.

The motions of the mandible were not easily determined. When the mandible functioned to the right side, the only point of contact was on the tip of the canine teeth, and on the $\underline{3}|$ a diminutive attritional area was present, giving the crown a slightly blunted appearance. The left lateral mandibular movement turned out to be the motion which produced a torsional effect upon the right upper third molar, and to a lesser extent upon the $\overline{7}|$ and $\underline{5}|$. The palatal cusp of the $\underline{8}|$ was prominent, and a tripping action was taking place between it and the distal surface of the $\overline{8}|$. More anteriorly, the $\frac{5|}{6|}$ were also in torsional relationship, again owing to the tilting of the teeth. Thus the left mandibular movement showed itself to be the motion calculated to create torsional stress upon the structures associated with the right posterior teeth. In addition, the right mandibular movement brought into play a concentrated force upon the upper right canine tooth.

It was reasoned that if conditions of physical equilibrium could be restored to the dental system, and thus to the areas of distribution associated with it, the symptoms of the effect of torsional stress within the area affected by the migraine would be relieved. In order to establish such conditions of physical equilibrium, the restraints which impeded the free

motions of the mandible were removed by appropriate occlusal bevelling.

Although the establishment of equable distribution of force was difficult of accomplishment owing to the eccentric transposition of the teeth, the results were spectacular, as the migraine headaches cleared up entirely and have not returned.

COMMENT.

Before these case histories are discussed, it will be necessary to investigate the origin of the external forces which act throughout the head, and also to ascertain what provision exists to cushion, as it were, the effect of these forces upon the structures upon which they act.

The Physical "Framework" of the Cranium.

When problems of a physical kind arise concerning the distribution of force throughout the cranium, it is impossible to overlook the fact that the only external forces which act upon the head are those created by the functioning of the muscles attached to the jaws; the mandible "applies" the force and the maxilla "receives" it.

FIGURE VIII.

FIGURE IX.

Note particularly the constricted arch, the malposition of the teeth and the absence of the upper incisor tooth. These specimens show that the ortho-position of teeth is not the paramount factor in maintaining physiological balance throughout the system, but that, whatever the arch form or whatever the position of its individual units, it is the controlled degradation of energy manifested in progressive adaptative attrition which is the fundamental desideratum.

It is consequently evident that the posture of the mandible, the dynamics of the temporo-mandibular articulation, the direction of the occlusal plane and the adaptation of the dental system are features of cardinal importance.

The Posture of the Mandible.

The posture of the mandible is that position which requires the least amount of energy to maintain the mandible in its normal structural relationship to the cranium; in this posture there is no contact between the teeth.

The mandible is the second bone of the body to calcify, and it has many different functions—as an aid to mastication, deglutition, middle-ear ventilation and skeletal orientation, and as a stimulant for facial development.

In its dynamic relations—that is, under functional stimulus—the resultant of its movements lies within a fixed region within the skull.

The Dynamics of the Temporo-Mandibular Articulation.

The mandibular joint is formed by the articulation of the head of the mandible with the articular fossa and the articular tubercle of the temporal bone. It is a synovial joint possessing a complete articular disc of fibro-cartilage which divides the joint cavity into two separate compartments—the upper one between the disc and the articular surface on the temporal bone, and the lower one between the disc and the head of the mandible. In man the motions are free as between the condyles and the glenoid fossa—that is, the mandible is literally swung from the cranium; and all motions are due to the actions of the muscles and the ligaments attached to its body. The important point to be emphasized is that the mandible articulates with the cranium; it does not articulate with the maxilla—it functions against it.

I would guard against creating the impression that the relationship between the mandible and the maxilla is comparable with that between a hammer and an anvil. The maxilla is the base upon which the mandible applies force, and the dental system is so constituted that, when it is functionally stimulated, the paths into which the motions are directed are determined by the dynamics of the temporo-mandibular articulation, and by the form and position of the teeth in the jaws. In other words, the dynamics of the articulation and the form and arrangement of the teeth in the jaws constitute a field of force which is invariable.

The Direction of the Occlusal Plane.

The occlusal plane is that plane which is determined upon the occlusal surfaces of the teeth, and in which the stresses arising from the moments of force throughout the dental system are dissipated (Maddern, 1942). The conformation is the resultant of the three planes of motion which the mandible undergoes, and the curve of Spee is formed as a result of the forces activated by such motivation of the mandible. These occlusal curves tend to converge the resultant of the applied forces to a fixed area within the skull.

The plane of occlusion maintains a constant angular relation with the nasal floor, and neither the nasal floor nor the plane of occlusion changes its angular relation with the cranial base plane (Brodie, 1951).

The Adaptation of the Dental System.

It may be laid down as axiomatic that the survival of an organ or of an organism depends upon its adaptability to its environment, and this is true in respect of the dental system.

The dental arches correspond to, and actually are, U-shaped beams under stress—that is, they are loaded U-beams. The effect of applied outer forces is to produce reactionary inner stresses, which lie in a direction opposite to the applied outer forces, and continue to act until equilibrium is reached, and in their action tend to enlarge the beam.

Now the direction of forces applied to the dental arches is, at all times, outward-inward, with continuity of movement throughout all the motions. The reactionary (inner) forces will therefore lie in a labial, oral and buccal direction. The vertical (reactionary) component will impart motion to the teeth in a vertical direction, and it is the component which effects the eruption of the tooth (Maddern, 1948).

The horizontal (reactionary) components will impart motion in a forward (labial) and lateral (buccal) direction.

It is obvious that the actual movement of the teeth in a labial direction must necessarily result in crowding of the teeth, unless the dental arches become larger—that is, expand—or the teeth themselves become smaller in their mesio-distal diameters. Actually both these phenomena occur, the former during development and the latter during functional existence.

Effect of Horizontal Components during Mandibular Motivation.—During functional existence, the effective horizontal component occasions loss of substance as between adjoining teeth manifested in planes of interproximal attrition, and the effect is to bring about a diminution in the mesio-distal diameter of the teeth.

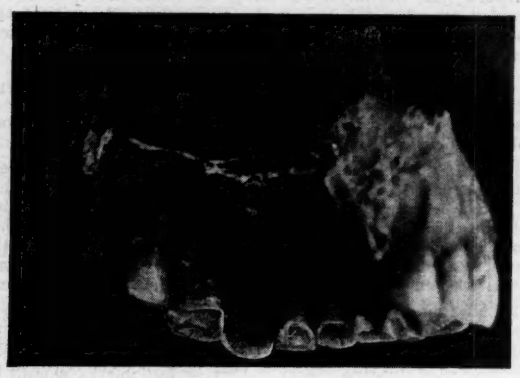

FIGURE X.

Same specimen as Figures VIII and IX. These specimens show the ultimate angulation of the adaptative plane within which the degradation of energy takes place throughout the dental system.

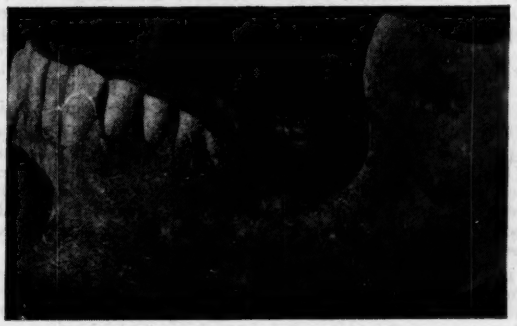

FIGURE XI.

Same specimen as Figures VIII and IX. These specimens show the ultimate angulation of the adaptative plane within which the degradation of energy takes place throughout the dental system.

Reciprocal Interaction and Balance of the Vertical Components.

During development and eruption, the teeth are orientated by the vertical components until they assume a position of minimal disturbance relative to the entire field of force. The teeth in the mandible are elevated and orientated into occlusion with the maxillary teeth, which have been in a similar manner similarly orientated under the influence of the same field of force.

Attrition.—It is here that the attrition of the hard dental tissues becomes evident as the physiological adaptation of the dental system, for in the plane of attrition the stresses, arising from the moment of the outer forces and of the shear, are used up, and thus, automatically, equilibrium is reached. This means no other than that the components in one denture are reciprocally balanced by the components in the opposite denture, and the progressive balance of energies throughout the entire dental system is one with the progressive continuity of planar distribution of stress upon the occlusal plane of the system (Maddern, 1948). The mechanics of the attrition constitutes the basis of many contributions in dental literature, and it would be redundant to deal with such a discussion at this time. It would be sufficient to say that the dynamic explanation of attrition is that it is present, and has its actual conformation by reason of certain physical conditions; that the plane of attrition is a mechanical adaptation calculated to translate

FIGURE XII.

Lateral view of skull (Australian aboriginal). The physiologically active protective dental system "cushions" the shock of the externally applied forces by translating them into horizontal and vertical components, and this uniformly distributed stress permeates the cranial structures.

oblique forces into axial and horizontal components; that the stresses set up by the moment and the shear are dissipated in the fashioning of this plane, and by the actual deformation, equilibrium of the structure is ensured. The attrition is an illustrative example of the "law of least action" or the "principle of Le Chatelier", which is the principle underlying the theory of adaptability (Burns, 1921).

Degradation in the Dental System of Man.

A study of the available material of the skulls and jaws of the Australian aboriginal enables a picture to be drawn and conclusions reached of the degradation of the energy, which is

FIGURE XIII.

The mandibular arch of same specimen demonstrates the interstitial and occlusal adaptative attrition.

equivalent to the progressive adaptation, of the human dental system. A study of the dental systems in such a race as the Australian aborigines exemplifies this in a manner impossible to duplicate in the skulls of the modern white subject, owing to the difficulty of obtaining sufficient specimens unaffected by disease, and to the impossibility of making parallel observations on jaws in which the teeth have been retained.

The adaptation of the dental system, as revealed by the conformation of the transverse attritional plane, indicates the following:

1. The planes are of continuous curvature. This implies that the external forces are applied from zero to final value gradually, and that, when applied, the forces are resisted by the system as a whole; and further, that the load applied on one side or the other, is "taken" by the entire system and not by any of its units individually (Figures I to V).

2. The plane on one side has reciprocal relations with the one on the other—that is, the stresses are conjugate and thus balance each other. This reciprocal adaptation is more noticeable when the attritional plane is of great complexity (Figures VI and VII).

3. Although the dental arches are not of uniform shape, such differences in arch form do not affect the tendency towards equilibrium throughout the system, as the form of the adaptative plane is always relatively complementary to the form of the arch.

4. The presence of a mechanical factor provides an ample field for all the various conformations in the occlusal attritional planes that occur. A change in the relative position of the

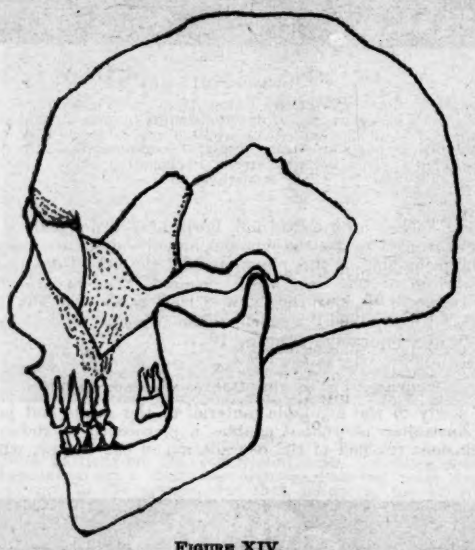

FIGURE XIV.

This figure diagrammatically represents the conditions associated with the case of Mrs. P. The only area of occlusal impact was in the left bicuspid region. The stippled area represents the paths of resultant stress. Within these areas dilatation and distension of the vessels would lead to pain.

mandible to the maxilla, or a tooth in some degree of malposition within each arch, introduces restraints which will modify the direction in which the energy will be degraded. A slight restraint will tend to produce a slight variation of the attritional plane from the horizontal, whereas the introduction of diversities of restraints will produce an attritional plane of great complexity (Figures VIII, IX, X and XI).

5. It is important to note that in those cases in which a tooth has been removed from the arch, usually a central incisor, for ceremonial or "aesthetic" reasons in the Australian aboriginal, the teeth posterior to it, as a rule, do not migrate forward; that is, the space is retained, not obliterated (see Figure VIII).

6. The outstanding feature is that the function of the adaptation ensures that stress is uniformly distributed over and throughout the entire dental system. This implies that the conditions are those concerned in planar distribution of stress (Swain, 1924). However, the system under discussion is a three-dimensional one, and in consequence, the adaptative planes on the tooth surfaces tend to cause the resultant of the masticatory forces to converge to a fixed point or area within the skull. This point or area would be the structural centre, as well as the centre of rotation, for all functional movement.

The attention may now be directed away from the intimate details of the dental system to the essential relations of the system with the rest of the head, when the paramount importance of the adaptation becomes manifest.

A study of Figures XII and XIII makes clear what I have attempted to describe. Force is exerted upon the under surface of the skull, and the stresses created thereby are distributed upwards throughout the cranium. The characteristics of the temporo-mandibular articulation make it abundantly clear that the dental system "takes the shock", as it were, and the progressive equilibration of the field of force resulting from the progressive adaptative attrition ensures that the resultant stress is uniformly distributed; in other words, conditions of physical equilibrium prevail throughout the cranium. The importance of this deduction cannot be over-emphasized, for it means that the physico-chemical processes involved in the complex act of metabolism within the vessels throughout the cranium take place under the overall conditions of physical equilibrium.

DISCUSSION.

Against this background of the "physical framework" of the cranium, it is now competent to review the conditions associated with the four cases quoted.

It would not be true to say that a "typical dental picture" exists in regard to headaches of the migraine and allied types. It would be true, however, to say that a picture does exist, but that it is of a negative kind; that is to say, something has occurred whereby the degradation of energy associated with the dental system has been channelled, as it were, into paths which have led to end results of an abnormal or pathological nature.

In all four cases the integrity of the dental system as a mechanism has ceased to exist, owing to the loss of a varying number of its individual units—the teeth. The collapse of the system was of varying degree in each case, but the effect in all cases was the same—namely, eccentric loading and/or overloading of the remaining structures in the regions of distribution (see Figure XIV).

All cases were alike in regard to the following features: (*a*) The temporo-mandibular articulation was not free but was locked, owing to the loss of teeth. (*b*) The posture of the mandible was altered and the attached musculature thereby modified. (*c*) The cuspal interference of the retained teeth resulted in further inhibition of the mandibular motions, leading to eccentric occlusal force. (*d*) The reduced surface area, owing to the loss of teeth, resulted in "overloading" of the remaining structures. (*e*) The resulting complete absence of any physiological adaptation in the form of planar attrition rendered the establishment of a plane of occlusion impossible.

In all cases the symptoms of migraine occurred on that side of the head, and in the area, that corresponded with the site of the resultant stress arising from the eccentrically loaded and overloaded structures; and in all cases, the symptoms subsided upon establishment of conditions of rest, which resulted from the elimination of this eccentric overload.

From a consideration of all the circumstances, it would appear that the hydrodynamic equilibrium associated with the vessels within the area of resultant stress had altered, and that the dilatation and distension of the vessels would lead to pain, the severity of which depended upon the degree of eccentric overloading upon the structures which form the remnant of the dental system, and on the intensity and duration of the applied force.

SUMMARY.

Four selected cases of headache of the migraine and allied types have been submitted and discussed. There was a satisfactory result in all cases when physical conditions of rest within the affected parts had been effected.

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SATURDAY, MAY 18, 1957.

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BIOCHEMICAL INDIVIDUALITY.

EVERYONE is aware that between man and man, and between animal and animal of the same species, there are numerous examples of variability, as distinct from the differences between animals of different species. There has, however, been little attempt to study specifically the extent of the variability. Variability in organisms is essential for evolution, and some attention has been given to variability and individuality in relation to disease susceptibility. It has been said: "It takes two to make a case of illness: the one who gets sick and the bug that bites him." Osler quoted with approval the statement of an early physician, Parry of Bath, to the effect that it is "more important to know what sort of patient has a disease, than to know what sort of disease a patient has".

Roger J. Williams, of the University of Texas, believes that variability is "vastly more important in the biological sciences and in medicine than it is currently assumed to be", and he has produced a book of 214 pages to demonstrate that this is so. The book, which is called "Biochemical Individuality",[1] is interesting and instructive; its basic thesis seems to be logical and sound, and it gives much material for thought. Williams makes it clear that most, if not all, factors in the human body which can be measured show a range of values in apparently normal individuals which may be small or relatively very wide in particular characters. A certain range is selected for each factor or attribute; any case within this range is considered to be normal and anything outside to be abnormal or at least a deviate. It is generally, if tacitly, assumed that normal people will have the important factors within the selected normal ranges. The selected range is commonly held to be that which includes 95% of the population examined. This will vary somewhat with the size of the population examined. Now, if we take the ranges based in this way for a number of factors, we can get surprising results. If 0·95 of the population is normal with respect to one measurable factor, it will be 0·902 ($0·95^2$) normal with regard to two, 0·6 ($0·95^{10}$) with regard to ten and 0·0059 ($0·95^{100}$) with regard to 100 uncorrelated factors. With the vast array of attributes in the human body, all of us must be deviates in some factors, and no one of us is likely to be normal (in our definition of normality) in all respects. Some deviations are important; others, so far as we know at present, are unimportant. We are all individuals differing from all other individuals. There are not enough data available yet to establish norms for every factor and attribute, even when these are well known.

For the measurements of any factor to be of greatest value they must have been obtained by the repeated examination of each individual of a large number, and such data are available in only a few cases. With a full recognition that the data are incomplete, Williams has collected an extraordinary amount of information about the variations occurring in the body. There can be little doubt that there is a genetic basis for individuality, even down to the enzyme systems in cells. The work on neurospora mutants shows this very well, and the inheritance need not be on any "1-gene-1-enzyme" relationship even in the neurospora. Because of what are called "leaky genes" or "partial genetic blocks", one can get a variable range of inability of a cell to carry out a specific reaction. In other words, impaired potentialities can be inherited. This is important, for in the long run all changes in the body, whether they be in gross anatomy or in fine cellular biochemistry, depend on the activity of enzyme systems. The most obvious differences between individuals are anatomical, and Williams has collected data from anatomical text-books and papers on such things as the variations in size, shape and position of the stomach, the liver and the pelvic and transverse colon. The observed variations encompass all structures in the body. The anatomical variations are relatively gross. Finer variations might be expected in the chemical composition of tissues and body fluids. The greatest amount of data is available about blood constituents. The very numerous investigations on blood grouping have shown the wide variation of concentration of the factors concerned in defining the blood groups. Further, we get some information about the relation of these variables to disease conditions. Type A blood is more common in patients with cancer of the stomach. Type O blood was found to be associated with peptic ulcer in a study of 3011 patients with peptic ulcer. Other blood groups have been associated with diseases. A great many figures exist for the ranges of variation of many organic and inorganic constituents of the blood. Some of the variations are quite small, others are large; for example, protein-bound iodine in the blood might be thought to have some relation to the activity of the thyroid, yet studies of apparently normal people have shown ranges of 3·32 to 9·82 milligrammes per 100 milli-

[1] "Biochemical Individuality: The Basis for the Genetotrophic Concept", by Roger J. Williams; 1956. New York: John Wiley and Sons, Incorporated. London: Chapman and Hall, Limited. 9¼" x 6", pp. 228, with illustrations. Price: $5.75.

litres in one series and 0 to 48·2 milligrammes per 100 millilitres in another. Very large variations occur in the content of vitamins in the blood. Tissue composition also varies; for example, bone, which might be expected to have a fairly uniform composition, showed a variation in young healthy males of 0·3 to 1·72 grammes of apatite per cubic centimetre.

To consider finer biochemical changes, studies of the cell enzymes are of first importance. Such work as has been done on this shows considerable variations. Most of the work so far has been done on blood, but the few tissues which have been examined show variations sometimes of from tenfold to fifty-fold. These differences must be associated with marked differences in cell metabolism. Endocrine concentrations in blood and urine show great variations. Most work has been done on the thyroid hormone and sex hormones. Every individual produces and excretes in the urine both androgens and œstrogens, and examination of urine shows very large variations in the relative proportions of the two. The excretion of substances in the urine, besides being affected by changes in food intake, also shows variations which cannot be associated with intake. These must demonstrate differences in metabolism. Pharmacological manifestations are of particular interest. There are large variations in the effect drugs have on different persons; they may be wholly favourable in some, highly unfavourable in others. These must be associated with variable cell activities.

From what has gone before one might expect large differences in intake requirements for different food constituents, and we get them. All figures given in tables of food requirements are compromise figures, being generally amounts which, it is assumed, will meet the requirements of most members of a community. It is particularly important to recognize this, for many people get along very well with very much less than is recommended. The vitamins give clear evidence of this. Very wide variations in calcium intake have been required to give calcium balance in numerous investigations. Williams points out that available data show that "(1) each human has quantitatively a distinctive pattern of nutritional needs, (2) from individual to individual, specific needs may vary several-fold, and (3) important deficiencies may exist which have not been discoverable clinically by observing acute outward symptoms". He discusses what he calls the genetotrophic approach, which may be stated as follows: "Every individual organism that has a distinctive genetic background has distinctive nutritional needs which must be met for optimal well being." Malformation, susceptibility to infection and disease, and degeneration may all be foreordained by the genetic pattern; but, providing the needs are known, the untoward effect may be overcome nutritionally. The science of nutrition has, up to the present, been concerned largely with basic requirements for groups of people. It must now consider not only individuals as units, but also the metabolism of the cells of individuals. This, of course, is a long-range project, for we do not now know enough about cell metabolism. However, much of value can be learnt by determining the ranges of variability of different factors and their relation to disease processes. There is very great scope here for research and much useful information could come from studies in clinical practice.

Current Comment.

SURGICAL INTERVENTION IN PARKINSONISM.

OUR aging populations have shown us an increasing incidence of parkinsonism. Whereas in the earlier years of this century parkinsonism following encephalitis was not uncommon, it is now extremely rare. Many authorities doubt, for instance, whether a well-authenticated case has been seen in England for some years. Nowadays the syndrome is associated with approaching old age and its attendant arteriosclerosis. Most sufferers, perhaps, have the syndrome only in a mild form, and in them the diagnosis is often missed. Most of the more severely affected can be treated adequately by the variety of antispasmodic drugs which are available. There remains, however, a hard core of patients whose parkinsonism is severe and disabling even to the point of producing a vegetable. It is with these patients that the neurosurgeons have become involved, and for them the operations of anterior choroidal artery occlusion and chemopallidectomy have been evolved. Irving S. Cooper's name has been associated with these procedures in recent years, and he has now reviewed a personal series of 300 cases.[1] Occlusion of the anterior choroidal artery was carried out in 55 patients. Abolition of resting parkinsonian tremor, without loss of motor function, is claimed in 65% of cases. Lessening of rigidity is claimed in 75%. Cooper states that his operative mortality is 10%, and that the risk of enduring hemiplegia is 8%. At the time of his paper he had not performed an occlusion for one year, mainly as he had then progressed to chemopallidectomy. Although his procedures have given some good results, a total of 18% of patients suffering permanent hemiplegia or death limits the procedure to people severely affected who undergo it with their full knowledge, as Cooper himself points out.

In the same paper Cooper comments upon 245 chemopallidectomies and claims that 85% of patients are improved in terms of tremor and rigidity. He claims an operative mortality of 2·8% and an overall incidence of severe complications of 6%. These are much more encouraging figures, and the operation can obviously be extended to older age groups. English and Australian opinion with regard to neurosurgical procedures of this type has always been much more conservative, and rightly so, since of all operations for this type of illness a large number have produced more untoward than acceptable results. One can imagine no overwhelming rush to perform these operations, but rather a judicious selection of a few subjects for whom the writing is on the wall.

ALCOHOL IN LIVER DISEASE.

THAT alcohol consumption and malnutrition are in some way associated in the causation of cirrhosis of the liver is generally accepted, but it is not known how these are related to each other. Diets deficient in choline and methionine without alcohol will induce in laboratory animals a condition of the liver which resembles cirrhosis in humans. However, it has been found that the administration of choline and methionine to alcoholics with cirrhosis does not produce clinical improvement. The relation of alcohol to the appearance of fat and fibrosis in the liver has not been established. In an attempt to gain a better understanding of the relation of alcohol intake to liver disease, W. H. J. Summerskill, S. J. Wolfe and C. S. Davidson[2] have administered alcohol to chronic alcoholics with liver disease. Observations were made on seven patients, all of whom had bad domestic surroundings, ate poor food and indulged in much alcohol. Every patient had clinical signs of hepatic disorder at the time of admission

[1] *J. Am. Geriatric Soc.*, December, 1956.
[2] *Lancet*, February 16, 1957.

to hospital; in five of the seven definite portal cirrhosis and fatty infiltration were shown by liver biopsy. The daily diets given contained adequate calories, and multivitamin tablets were given to ensure that there was no deficiency of vitamins. Alcohol was given as 95% ethyl alcohol in fruit juice in divided doses. The total daily intakes were 90 to 120 millilitres.

The administration of alcohol did not appear to have any adverse effect on the clinical condition of the patients over the period of the observations, which was ten to thirty-two days. All the subjects showed marked anorexia at the beginning of the observation period, but after a few days with alcohol the appetite improved greatly, the patients felt better, and some gained weight. There was no evidence that alcohol consumption had any significant effect on nitrogen balance. Liver function tests showed no deterioration during the period of the experiment. In most of the patients the hepatic histological condition, as seen in biopsy specimens, was better at the end than at the beginning of the experiment. Alcohol did not impede the cure of peripheral neuritis where this was present.

That alcohol consumption may be a causal factor in the development of cirrhosis of the liver is generally believed, but in this investigation no bad effect was noticed, although the amount of alcohol taken was quite large. It is to be noted that the subjects were given a vitamin mixture, which, no doubt, contained an ample supply of thiamine. It has been shown several times that peripheral neuritis can be cured with thiamine, even when large amounts of alcohol continue to be consumed. This investigation gives no new information as to the relation of alcohol consumption to the causation of cirrhosis of the liver. The subjects of this investigation had ample calories and sufficient protein and vitamins. The authors suggest that alcohol may have a place in the treatment of alcoholics with liver disease because of the stimulation of the desire for food, for anorexia commonly complicates the management of these patients.

THE SOLITARY PULMONARY NODULE.

THAT disquieting entity, the solitary pulmonary nodule, has again recently been subjected to scrutiny in a study of 215 cases by E. W. Davis, J. W. Peabody and S. Katz.[1] These cases with those found in the literature from 1948 on were analysed, making a total of 1203. The 215 cases had been enlarged from the original group studied by the senior author since 1942, so that opportunity was afforded for a "ten year plus" study in some cases. The 215 cases were a fair sample of the 1203, except for the rare single lesion cases, and the breakdown of this carefully observed sample will be followed. In each case the lesion was subjected to pathological examination. For purposes of universal comparison the following radiological criteria were developed: the nodule must be six centimetres in maximum diameter at the time of first sighting; it must be solitary, although small satellites might develop; the nodule must appear to lie within the pulmonary parenchyma with aerated lung around it in one of the usual X-ray views (obvious extrapneumonic masses were excluded); the shape must be round or ovoid or very nearly so, with circumscribed margins and smooth contour; there must be no demonstrable calcium or cavitation within the nodule; associated pneumonitis, atelectasis or regional lymphadenopathy must be minimal. The majority of the patients were asymptomatic, but this was not a prerequisite of the classification.

Malignant tumours numbered 101 (47%) and granulomata 82 (38%). Davis *et alii* include nine bronchial adenomata in their malignant tumour group on grounds of malignant propensity and pre-operative diagnostic difficulty. They point ont that bronchial adenomata may occur peripherally. Seventy-nine tumours (37%) were bronchogenic carcinomata, the squamous type being somewhat more common than the "adeno" type. It is of interest to note that ten metastatic tumours were removed, mainly because of pre-operative uncertainty about diagnosis. The remainder were primary pulmonary sarcomata or reticulomata. There were 17 tumours classed as benign—nine hamartomata from eight patients, six pleural mesotheliomata, which conformed with the radiological criteria given above, and two intrapulmonary neurofibromata. It seems somewhat arbitrary to class the mesothelioma as a benign tumour, when for similar reasons the bronchial adenoma is considered malignant.

The granulomata were particularly interesting. For some time these were classed by the usual hæmatoxylin-eosin staining as "tuberculomata". On reconsideration, 71 of the 82 tumours excised were reexamined. By using the periodic acid-Schiff (PAS) and Gridley (M. F. Gridley[1]) stains for demonstrating fungi, as well as the Ziehl-Neelsen stain, Davis *et alii* demonstrated that 39 of the "tuberculomata" were due to histoplasma; only nine were certainly due to tubercle bacilli (made up to 12 by culture or sputum studies), five were due to coccidioides, and the remainder were non-specific. Thus, over half of the non-calcified pulmonary granulomata of this type were mycotic in origin. Davis *et alii* state that only once were they able to grow a culture of histoplasma from the specimens. The use of special stains would seem obligatory in the future; examination of serial sections of a necrotic centre stained with hæmatoxylin-eosin may reveal no more than coagulation necrosis, whilst in the next section, prepared with one such stain, numerous histoplasmas may be seen in the same area.

The rare causes of the lesion in this series were chronic pneumonitis (four), bronchogenic cyst (three), bronchopulmonary sequestration (three), neurofibroma (two), chronic lung abscess (two), lipoid granuloma (one), hyperplastic lymph node (one) and "aspergilloma" (one). No hydatid cysts were encountered.

Clinically, little aid in diagnosis was obtained other than from general considerations. Thus the amount of malignant change proportionally increased with age, but a bronchogenic carcinoma was removed from a man of twenty years and from seven of eight people over seventy years of age; the usual male bias towards this lesion was also present here. Davis *et alii* state, however, that the outstanding characteristic of the solitary pulmonary nodule is the failure to establish its nature by any means other than thoracotomy. The patients are usually asymptomatic, and histories may be misleading in regard to the present lesion. No single respiratory symptom or pattern occurs significantly more often in one group than the other. Special tests are also dismissed as of no real value. The erythrocyte sedimentation rate did not help with regard to the malignant lesions. The skin tests were of greatest value pre-operatively, when all yielded negative results. Bacteriological examination of sputum for acid-fast bacilli failed to reveal them in six of twelve lesions ultimately proved to be tuberculous by the use of concentrated smear and culture. Guinea-pig inoculation is not mentioned, possibly because of the length of time involved. Four patients with carcinoma had coincidental "positive" sputum—two with definite tuberculosis, two with no determinable tuberculous lesion. The value of cytological examination is summarized thus: The value of malignant cell studies is seriously limited by the complete unreliability of a negative finding, the occasional unreliability of a positive finding and the failure of either a positive or negative finding to alter the decision to operate—except perhaps in a "very poor risk" patient. As most of the lesions were peripheral, bronchoscopic examination was rarely of any assistance.

The X-ray appearances are analysed in terms of size, sharpness of margin, umbilication of margin, recent origin and rate of growth, density, calcification, cavitation and satellite nodules. In each instance no specific reliance could be placed on them as a guide to malignant change or otherwise. A trend of circumstances in which the lesion was three centimetres in diameter, of sharp margin, not

[1] *J. Thoracic Surg.*, December, 1956.

[1] *Am. J. Clin. Path.*, March, 1953.

umbilicated, long standing, slow in growth and of heavy density, with calcified specks, no cavitation and late satellite nodules, would lead to an insecure feeling that the lesion was benign. The question of calcification was especially vexatious. Davis *et alii* conducted a survey of the views of members of the American Association of Thoracic Surgery, in which 328 (74%) members participated. Those participating were evenly divided between resection and observation of the partly calcified lesion and were strongly (250) against regarding a few specks of calcium within the nodule as implying benignity; 114 had personally encountered a partly calcified malignant lesion (mainly bronchogenic carcinoma). The amounts of calcium were mainly specks of microscopic size, but again there were sufficient exceptions to prevent reliance on the benignity of more heavily or even of centrally calcified lesions.

The bias to thoracotomy was fundamental. In all cases the magnitude of resection was dictated by the patient's condition, the gross findings at operation and the results of frozen section tissue examination. In eight cases exploration and biopsy only were feasible; these cases are excluded from the series presented. In 108 cases thoracotomy with a limited resection was carried out without a death; the morbidity was confined to three patients, with empyema and/or reactivation, who required completion of lobectomy. In 107 cases the patients underwent either lobectomy or pneumonectomy, and six died, five as a direct result of operation and one six weeks later; morbidity resulted in seven cases, being due to bronchopleural fistula empyema. The over-all mortality rate was 2·6%, and the morbidity rate 4·7%. In the remaining cases the patients did well and were discharged from hospital on an average of eight to ten days after operation. Thus, there is considerable justification in skilled hands for using thoracotomy for diagnostic and therapeutic procedures with these lesions. This statement weighs against those with simple self-limiting lesions, but in the absence of pre-operative diagnostic certainty the extra risk may be considered worth while. Some might demand a reclamation rate in terms of survival and saving of symptoms over that occurring from supportive management. This is an unpondered problem here in relation to the granulomata; in respect of the bronchogenic carcinomata, 11 of 79 patients have now passed five years or more without symptoms or signs of recurrence after operation.

DRUG ADDICTION AND DRUG HABITUATION.

THE ideas of addiction and habit formation in relation to drugs are commonly confused, and the terms are sometimes used interchangeably. It is clear that there is a distinction between the two, but the border line is often hard to draw. The question has come up for discussion on a number of occasions at the meetings of the Expert Committee on Addiction-Producing Drugs of the World Health Organization, and it was again discussed at their seventh session in October, 1956, the report of which has been recently received.[1] At earlier sessions the Committee had produced definitions of a habit-forming drug and of drug addiction, and had expressed the view that the use of the term "habit-forming" when the meaning was clearly "addiction-producing" should be discontinued. The report of its third session declares "that a distinction can and must be made between drug addiction and habituation (habit), and between addiction-producing and habit-forming drugs, that the terms are not interchangeable, and that only the expressions drug addiction and addiction-producing drugs should be used in documentation with respect to substances brought under, or to be brought under, international control". In its latest report, the Committee is critical of its earlier definitions, particularly of a habit-forming drug, and seeks to revise the thought that a habit-forming drug is not generally considered to be detrimental to the individual. The Committee is also not satisfied that its earlier definitions have attracted adequate notice, perhaps because they were inadequate in themselves. It is pointed out that in the United States, the term "habit-forming" to include addiction-producing and some other drugs was, and still is, employed in the regulations under the *Food, Drug and Cosmetic Act*, in which it is expressly stated that packages containing any one of a given list of drugs must carry a warning on the label: "May be habit-forming." The expression "habit-forming" seems to have been employed in the regulations, partly because at the time it was a generally used term in the sense of addiction-producing, and partly in order to apply the warning to substances for which there was no evidence then of their addiction potentiality, but for which there must have been admitted habit-forming liability. These include the barbiturates and some other sedative drugs. The Committee comments that the expression "habit-forming" still has the connotation of "addiction-producing" in the minds of many, and the situation cannot be clarified as long as "habit-forming" is used in a dual sense, or as long as there is not a more precise differentiation of terms by a more explicit definition. Many authorities have expressed the view that all drugs which are used therapeutically for a central sedative or tranquillizing effect, to promote sleep or to relieve anxiety, may be habit-forming. Some drugs which are used for a central stimulating or exhilarating effect may also be habit-forming. With both types the essential fact, presumably, is improvement in the sense of well-being. Habituation to these agents is not primarily or essentially an abuse, except that it may lead to unduly prolonged or excessive administration not related to symptomatic relief. Such excessive administration may result in physical dependence and development of a true addiction. With the barbiturates, for example, it has been established that there is a critical dosage level for some barbiturates, above which definite addiction, with all its characteristics, is demonstrable. Whether this is so for sedatives generally is not known; but the possibility that they can produce habituation should be recognized, and becomes of increasing importance with the widespread and ever-growing use of the so-called tranquillizing drugs.

The Committee therefore considers that the time is ripe for emphasizing again the distinction between "addiction" and "habit", and for the strict application of the terms "addiction-producing" and "habit-forming", so that there may be appropriate warning in both instances on labels and in all literature; thus the occurrence of abuse may be watched for and guarded against. Addiction-producing drugs need strict control, international and national; for habit-forming drugs, the warning and national control measures should suffice, at least until such time as the seriousness of habituation in a particular case is fully established; but any warning concerning habituation should not carry the stigma of addiction. Three things are laid down as necessary: (i) the drafting of as precise a definition as possible of a habit-forming drug and of drug habituation; (ii) the recommendation that these terms, as well as "addiction-producing" and "drug addiction", be used in compliance with their established definitions in all literature, including warning labels; (iii) the establishment of criteria by which the development of habituation may be determined. To this end the Committee has approved the following definitions. Drug addiction is defined as a state of periodic or chronic intoxication produced by the repeated consumption of a drug (natural or synthetic). Its characteristics include (i) an overpowering desire or need (compulsion) to continue taking the drug and to obtain it by any means, (ii) a tendency to increase the dose, (iii) a psychic (psychological) and generally a physical dependence on the effects of the drug, and (iv) detrimental effect on the individual and on society. Drug habituation is defined as a condition resulting from repeated consumption of a drug. Its characteristics include (i) a desire (but not a compulsion) to continue taking the drug for the sense of improved well-being which it engenders, (ii) little or no tendency

[1] "Expert Committee on Addiction-Producing Drugs: Seventh Report", World Health Organization Technical Report Series No. 116; 1957. Geneva: World Health Organization. 9¾" × 6¼", pp. 15. Price: 1s. 9d.

to increase the dose, (iii) some degree of psychic dependence on the effect of the drug, an absence of physical dependence and hence of an abstinence syndrome, and (iv) detrimental effects, if any, primarily on the individual.

The definition of drug addiction is substantially the same as that given in an earlier report of the Committee, but that for drug habituation is new. In elaboration of the definitions it is pointed out that a habit-forming drug is one that produces habituation (habit) but not addiction when used continuously at about the usual therapeutic dose level. Some habit-forming drugs, when used excessively in terms of dosage and/or frequency of administration, may produce a true physical dependence (addiction) superimposed upon a psychic dependence. Drug habituation resulting from the repeated administration of a drug must have certain characteristics: a degree of psychic dependence and a desire, but not a compulsive craving, to continue taking the drug for the sense of improved well-being which it engenders. A tendency to increase the dose to maintain or increase the effect may or may not be present, and physical dependence, with its concomitant of a withdrawal syndrome, is always absent. Another important point is that any detrimental effect of habituation is primarily directed to the individual. Abuse, with habit formation, may, however, become so widespread as to become detrimental to society, usually a geographically localized society. Examples of such widespread abuse are the wrong use of amphetamines in some areas, the excessive use of barbiturates and the extensive and spreading use of tranquillizing agents.

The Committee goes on to state that the most difficult part of all may be the establishment of satisfactory criteria for determining the presence of habituation, but a few suggestions may be made. Proof of psychic dependence is essential, and it is doubtful that any animal experiment can furnish such proof even though animals can develop a habit of performance. Regularity of administration in man, with or without a change in dose or frequency, and ability to distinguish between the drug of habituation and a placebo, are possibly criteria. It is suggested that a *questionnaire* could be developed, to be filled out periodically during administration of the drug and of a placebo, and that this would throw light on the presence of psychic dependence. A psychically dependent—that is, an habituated—individual would probably seek the same or similar medication if administration was interrupted, and in order to obtain resumption of such medication would tend to exaggerate the recurrence of symptoms said to be relieved by the drug. Undoubtedly there are other useful criteria for habituation. A carefully thought out, carefully controlled double-blind study with a group of sedative agents and a placebo, carried out on patients seeking relief for anxious or nervous states, would seem a useful line of attack which would go far to clarify the whole situation.

THE SICK HEART.

"THE MEDICAL CLINICS OF NORTH AMERICA", published by W. B. Saunders and Company, continue as though blessed with the eagerness of eternal youth, and January, 1957, brought an issue called "The Sick Heart". It is a stimulating book to read, as most of the topics are those of the moment. Since the facts concerning these topics are superficial and scanty, there is great scope for argument and disagreement. One paper in the book concerns long-term anticoagulant therapy in ambulatory patients following coronary occlusion. The authors, F. Tanzi and A. L. van Ness, commence with the statement that anticoagulant therapy in the treatment of acute myocardial infarction is generally accepted. Whilst this statement may be fairly true, it does no justice at all to many distinguished clinicians who remain unconvinced of the overwhelming value of anticoagulants in this particular illness. Perhaps the real truth is that too much of the comment in papers on this subject is based upon retrospective grouping of cases. There can be no doubt, however, that much more information is required. The Cardiology Service of the University of Chicago is one of the institutes which treats with anticoagulants all patients suffering from suspected myocardial infarction. The contraindications of which they take heed are: evidence of clotting difficulties, and lesions, benign or malignant, which have potentialities for severe bleeding. A state of hypoprothrombinæmia already present has been taken as a contraindication. If by this they mean that a patient presenting with a coronary occlusion is found to have a prolonged prothrombin time before therapy is instituted, not everyone would agree that this was a contraindication. It is now a well-known observation that many patients with a coronary occlusion, and in the absence of any other discoverable pathological lesion (as, for instance, cirrhosis of the liver), will have a prolonged prothrombin time. These patients are often slightly overweight, middle-aged people of asthenic or mesomorphic build. Anticoagulants in them would seem to be indicated more strongly. We do not know the mechanism of this phenomenon, but this very labile prothrombin activity is obviously important. Speculation upon this phenomenon leads us to wonder whether these patients are the ones who would benefit most from prolonged anticoagulant therapy as an extrapolation of a supposed spontaneous bodily reaction.

Tanzi and van Ness state that most patients have been treated with heparin and "Dicoumarol", and that other anticoagulants have not been found to possess any decided advantages. This is certainly a welcome breeze to blow through modern medical literature, so much of which seems to emulate the tabloid Press in the pursuit of the new. Since the introduction of preparations of vitamin *K* analogue for intravenous use, hæmorrhage resulting from anticoagulant overdosage has lost a great deal of terror. Whatever disparaging remarks may have been made about "Dicoumarol" and "Tromexan", it has sometimes seemed easier to control patients with them than with newer anticoagulants. Tanzi and van Ness have found, as have others, that patients vary in their requirements, not only from each other, but also in themselves from time to time. They prefer to aim at a prothrombin time which is two to three times that of the normal. This aim touches one of the great unknowns in cardio-vascular therapy: how close to the point of hæmorrhage should anticoagulant therapy be pursued? Many clinicians would argue that, although with such conditions as *thrombophlebitis migrans* a prothrombin index of 30% to 50% is sufficient to obliterate symptoms and to be clinically effective, with coronary occlusion the anticoagulant therapy needs to produce an index of 10% to 20%.

Tanzi and van Ness go on to consider the administration of anticoagulants to out-patients. They note that some patients will settle down quickly with anticoagulants and maintain a fairly steady prolonged prothrombin time, whereas some will not settle and prove unsuitable for such out-patient therapy. They analyse their figures and quote a post-coronary occlusion mortality of 6·1% over a period of some seventy-two weeks. This figure is lower than in most series of cases in which anticoagulant therapy has not been continued to the patient as an out-patient. The authors admit that they have no suitable control group. These figures are extremely interesting, since the subject of out-patient anticoagulant therapy is a controversial one. It has been established by now that, where laboratory facilities are available, and given intelligent, cooperative patients, an out-patient clinic consisting of post-coronary occlusion patients receiving anticoagulants can be maintained without mishap. The risk of hæmorrhage, while remaining present, seldom becomes manifest. The question of whether the anticoagulant therapy has any real value cannot yet be resolved. There is no series which has extended over a long enough period of time, or which has an adequate control group. Moreover, since the ætiology of coronary occlusion is by no means clear, the mechanism of action of out-patient anticoagulant therapy, if any, cannot be stated precisely. In conclusion, it is, however, true that a prima-facie case exists for the exhibition of such therapy.

Abstracts from Medical Literature.

MEDICINE.

Painful Shoulder.

E. F. MORGENSEN (*Acta med. scandinav.*, Volume CLV, fascicle iii, 1956) discusses painful shoulder. He mentions various theories advanced as to the cause of painful shoulder, including the view of Steinbrocker that the shoulder-hand syndrome is a reflex dystrophy. However, from a review of 282 patients the author concludes that the painful shoulder is due to a variety of conditions, and is not covered by the theory of reflex dystrophy or impaired blood circulation or lymphatic drainage, as has been suggested. The author considers that trauma, age and limitation of movement are the main causes of painful shoulder, and that abnormalities in the connective tissues may prove to be important; in other words, what is called fibrositis may be an important factor.

Arterial Occlusion.

W. F. KVALE (*Dis. Chest*, September, 1956), reviewing the modern treatment of occlusive arterial disease, states that anticoagulant drugs are of value in acute arterial occlusion, but usually not of practical value for preventing thrombosis in chronic occlusive arterial disease. Abstinence from tobacco is imperative.

Obesity and Infarction of the Heart.

K. T. LEE AND W. A. THOMAS (*Am. Heart J.*, October, 1956), studying 450 patients who had died of infarction of the heart, found that the incidence of obesity was no greater than in persons of similar age in the general population. They suggest that body weight does not materially affect the prognosis or the time of onset of acute infarction of the heart. The weights of the older individuals in the group studied and in control groups were found to differ considerably from the current standard tables of ideal weights in use in insurance practice: these are based on the weights of young adults. The average weight of individuals increases progressively with age.

Bleeding Peptic Ulcer.

A. ALDWÀN AND S. WALLENSTEIN (*Acta med. scandinav.*, Volume CLV, fascicle iii, 1956) summarize a clinical study of 511 cases of bleeding peptic ulcer, 405 in male and 106 in female subjects. Gastric and duodenal ulcers had the same bleeding frequency. Gastric ulcer bleeding occurred in the higher age group and duodenal ulcer bleeding in the lower age group. Mild hæmorrhages were not dangerous; severe hæmorrhages were infrequent but fraught with danger to life at times. Generally treatment was conservative, by Meulengracht's method, with frequent meals from the outset. Blood transfusions were given to prevent shock and to control anæmia. X-ray examinations were made early during bleeding. In 57 cases X-ray examinations were made on the patient's admission to hospital. The results were helpful and never harmful. In 41 cases a niche in the duodenum or stomach was observed, and in 10 cases a deformity of the duodenum was seen which suggested ulcer. X-ray pictures were taken, often only with the patient in the recumbent position, as the patient's condition usually ruled out the upright position. When bleeding continued in spite of medical measures, partial gastrectomy was performed to arrest suspected arterial hæmorrhage. In patients over sixty years of age urgent surgical treatment was often indicated.

Pulmonary Emphysema.

A. H. RUSSAKOFF (*Dis. Chest*, October, 1956) reviews the physiological derangements which occur in pulmonary emphysema, or which may be provoked by injudicious treatment. The effective alveolar ventilation is reduced relatively much more than the tidal air, because of the effect of the dead space, which is about 150 millilitres. A person taking 20 breaths a minute, each of 500 millilitres, has an effective alveolar ventilation of 20 (500—150) millilitres or 7000 millilitres per minute; whereas in an emphysematous subject taking 40 breaths per minute each of 250 millilitres this value is reduced to 40 (250—150) millilitres or 4000 millilitres per minute. Thus in a desperate situation tracheotomy may be of value in lessening the dead space as well as for facilitating the removal of excess secretion. Oxygen should be used with caution in the presence of hypercapnia, for the respiratory centre may no longer be responding adequately to increases of carbon dioxide in the blood. Oxygen therapy, by leading to diminished pulmonary ventilation, may increase the hypercapnia and cause uncompensated respiratory acidosis.

Heart Affection in Serum Sickness.

S. CONTRO AND E. MOND (*Am. Heart J.*, October, 1956) found that 11 out of 22 patients with serum sickness developed electrocardiographic abnormalities, fleeting in some, more protracted and associated with a severe course of the illness in others. The finding was not regarded as surprising, since the characteristic feature of serum sickness is widespread damage to blood vessels, including those of the heart. The authors formed the opinion that the appearance of electrocardiographic abnormalities in serum sickness points to the possibility of serious cardiac damage, so that immediate steroid therapy is indicated.

Pathogenesis and Treatment of Macrocytic Anæmia.

PATRICIA A. MCINTYRE, MARIE V. SACHS, JULIUS R. KREVANS AND C. LOCKARD COULEY (*Arch. Int. Med.*, November, 1956) discuss the pathogenesis and treatment of macrocytic anæmia with special reference to information obtained with radio-active vitamin B_{12}. They state that clinical vitamin B_{12} deficiency states are almost always the result of impaired absorption of the vitamin from the gastro-intestinal tract. The use of vitamin B_{12} labelled with radioactive cobalt has made possible direct measurement of the capacity of the intestine to absorb the vitamin. A surprising result has been the demonstration of the limited and retarded absorption of vitamin B_{12} by normal persons. Severely impaired uptake of the vitamin is regularly encountered in patients with pernicious anæmia. Other members of the families of patients with pernicious anæmia not infrequently are found to have subnormal absorption. Defective absorption occurring as a result of deficiency of intrinsic factor can be corrected by administration of a source of intrinsic factor together with vitamin B_{12}. Absorption defects are not overcome by intrinsic factor concentrate when they result from functional or anatomical derangements of the small intestine, as in sprue, enteritis, pancreatic insufficiency and intestinal resection. When deficient absorption is the result of utilization of the vitamin by parasitic organisms in the intestinal tract, destruction of the organism corrects the defect. The restricted absorption of vitamin B_{12} from the alimentary tract, even in normal persons, makes it obvious that intensive therapy with the vitamin can be effectively accomplished only by parenteral administration.

The Prognosis of Infarction of the Heart.

A. M. MASTER *et alii* (*Dis. Chest*, December, 1956) state that as at least four out of five patients make a satisfactory or complete functional recovery from acute coronary occlusion and are able to perform useful work for many years, one of the major functions of the physician is to reassure the patient, as well as his family, during the attack and later to advise early resumption of gainful work when possible. In a series of 500 patients, those who resumed work did not experience a heavier mortality than those who retired; but it was often necessary for them to take up less strenuous work than they did before. It is mentioned that some States of the Union, through "second injury" laws, have attempted to stimulate the employment of persons partially disabled through heart disease, by means of an equitable adjustment of the liability which an employer must assume in hiring such a worker.

Friedländer Bacillus Infection of the Lung.

L. D. ERASMUS (*Quart. J. Med.*, October, 1956) discusses Friedländer bacillus pneumonia; 17 cases are discussed in European and Bantu patients observed between 1952 and 1954. Of 14 cases in which Friedländer bacillus was thought to be the primary invader, 11 were in male patients and three in female patients. There was evidence of pneumonia and of the Friedländer bacillus as the only or predominant organism on two successive days. Both primary and secondary Friedländer pneumonia were recognized. The pneumonia was treated as a rule with penicillin or sulphadiazine, being indistinguishable from other types of pneumonia. The onset was usually acute, with fever, pleuritic pain, cough, blood-stained sputum or purulent sputum. Half the patients had a previous history of pneumonia or upper respiratory tract infection. The fever and general signs

were those of pneumonia. The X-ray films showed signs of consolidation, pneumonic or bronchopneumonic. The organisms were sensitive to streptomycin, chloramphenicol or sulphadiazine, and were frequently resistant to tetracylines, penicillin and erythromycin by in-vitro tests. In treatment, streptomycin, chloramphenicol and sulphadiazine were used as a rule.

Apical Localization of Pulmonary Tuberculosis.

C. E. TARNOWSKI (*Acta. tuberc. scandinav.*, 1956, xxxii, 225) describes numerous original experiments, which, he states, furnish an explanation of the apical localization of pulmonary tuberculosis in the adult. He has shown that tuberculous pus and such infective tuberculous material as may circulate in the blood are of lower specific gravity than the serum and of great buoyancy, owing to their high lipoid content. Thrombotic emboli, which are relatively heavy, tend to lodge in the lower parts of the lungs.

Parainfectious Encephalomyelitis.

H. G. MILLER, J. B. STANTON AND J. L. GIBBONS (*Quart. J. Med.*, October, 1956) give a critical review of the neurological complications of certain specific fevers. They review the literature in this connexion in measles, varicella, rubella, mumps, scarlet fever and pertussis. In measles, rubella and varicella, polyradiculitis, myelitis and encephalitis are reported, the last mentioned accounting for nine out of ten cases. In mumps and scarlet fever the same syndromes occur, with encephalitis predominating, but lymphocytic meningitis is even more common. Coma and convulsions are serious complications. The mortality of encephalitis in these fevers varies from 10% in varicella to 20% in rubella, measles and mumps. Changes in the spinal fluid do not always occur; pleocytosis and increase of protein may be noted, but these have no prognostic value. The pathological findings showed early vascular involvement and perivenous infiltration and demyelinization.

Psychomotor Aspects of Ulcerative Colitis.

J. GROEN AND J. M. VAN DER VALK (*Practitioner*, November, 1956) discuss psychosomatic aspects of ulcerative colitis. Cecil D. Murray first discussed this aspect of colitis in 1930. Since then it has been widely considered. The authors state that psychogenic causes have been very much to the fore since 1930. It is stated that individuals of a particular personality structure are liable to ulcerative colitis, and that the condition may commence within twenty-four to forty-eight hours of some mental conflict, even a coarse verbal offence. There is no fighting, weeping speech or action; the effect is internal. Individuals affected are sensitive infantile personalities, dependent and passive, craving sympathy, affection, admiration and protection, egocentric, self-seeking, hesitating, uncertain, and showing inadequacy and inferiority, as well as petty traits such as exaggerated decency, dislike of the vulgar, neatness in dress, carefulness, association with people of higher rank, a sense of cleanliness, pseudovirility or housekeeper neatness. The authors conducted certain tests on four patients with colonic fistulæ, and they recorded changes in colour and vascularity in the colon of these patients as a result of emotional stimuli of different kinds. The impression gained was that psychic stimuli caused changes in the vascularity of the colon in ulcerative colitis. In treatment, psychotherapy, small doses of corticotropin, full diet, fluids, electrolytes and blood transfusions are advocated. The authors emphasize that the psychotherapy of ulcerative colitis should not be put off as a last resort. Early psychotherapy by the patient's own doctor is desirable.

The Heart in Infectious Mononucleosis.

R. J. HOAGLAND (*Am. J. Med. Sci.*, September, 1956) found electrocardiographic abnormalities in only five out of 100 patients with infectious mononucleosis, and usually the abnormalities were slight and transient. Review of many reports of electrocardiographic changes in this disease revealed that the "changes" were often not beyond the range of normal. Myocarditis is not a clinically recognizable feature of infectious mononucleosis, so that physicians have no good reason to induce cardiac anxiety in patients.

The Mechanism and Treatment of Iron-Deficiency Anæmia.

ALEXANDER R. STEVENS (*Arch. Int. Med.*, November, 1956) discusses the mechanism and treatment of iron-deficiency anæmia. He states that iron-deficiency anæmia occurs at all ages, but its pathogenesis is different in childhood and adult life. Excretion of iron is negligible. In the growing child, the needs of an expanding red cell mass require appreciable absorption of dietary iron, and the anæmic child will usually be found to have a diet deficient in iron-containing foods. In adult life, a constant amount of iron is present in the red cell mass, and an additional supply, available for hæmoglobin production if needed, is stored in the tissues. Once iron stores are accrued, the adult is virtually independent of dietary iron, and iron deficiency develops only after chronic blood loss. The only certain diagnostic test for uncomplicated iron-deficiency anæmia is response of the patient to iron therapy. It should be administered in the form of reduced iron salts, such as ferrous sulphate or gluconate. Iron given in the fasting state is better absorbed, but produces more frequent symptoms of gastric intolerance. Continuance of oral iron therapy after correction of anæmia is of little benefit, since absorption in the non-anæmic person is so slight that reconstitution of depleted stores by the oral route would require many months or years. Adjuvants to iron therapy are not necessary and are not recommended. Hydrochloric acid is unnecessary, since it has been demonstrated that patients with gastric achlorhydria can absorb iron as well as normal subjects. In tests in which radio-actively tagged iron salts are used, the addition of ascorbic acid as a reducing substance has little effect on the amount absorbed. In children, iron-deficiency anæmia is usually the result of a deficient diet, and treatment with iron should be supplemented by correction of the diet. In adults, it is a symptom of chronic blood loss, and it may be the first signpost of a serious underlying bleeding lesion. Parenteral administration of iron is indicated in certain patients. New preparations, especially iron-dextran, which may be administered in large doses intramuscularly, increase the ease and safety of parenteral therapy, but at the same time they raise the possible hazard of overloading the patient with iron.

Inherent Dangers in the Use of Tranquillizing Drugs in Anxiety States.

HERMAN A. DICKEL AND HENRY H. DIXON (*J.A.M.A.*, February 9, 1957) discuss the inherent dangers in the use of tranquillizing drugs in anxiety states. The effects of these drugs were studied in a series of 8200 patients in whom anxiety was the chief finding. The group was limited to people of normal physical make-up and of at least average intellectual capacity, who were capable of working steadily and were complaining of tension, worry and associated physiological disturbances. Of these, 7500 had taken some amount of the tranquillizing drugs before they came under observation. The authors state that the danger to the patient's health is shown by the appearance of allergic phenomena in 96, general toxic effects in 78, habituation in 72, severe liver disturbances in 31, other severe symptoms in 97, and death in four. Two of the deaths were suicides. The danger to the patient's emotional health is shown by the finding of about 1700 instances in which serious problems were created in essentially normal people, and 827 instances in which emotional illness was aggravated. The danger to the physician results from the accumulating pressure on the medical profession from the people who produce and those who demand these drugs. There is a grave danger to society in the idea that tensions should be reduced by techniques of relaxation and administration of drugs rather than by constructive efforts required for satisfying needs and removing dangers. The physician must inform himself well about these drugs and reorientate his own thinking about their indications and limitations.

Bullous Emphysema of the Lung.

C. J. STRINGER AND C. A. BURNETT (*Am. Rev. Tuberc.*, December, 1956) maintain that the best treatment for emphysematous bullæ in the lung is to remove the pleural roof and to approximate the walls (composed of pulmonary parenchyma) and the pleura with a continuous suture of fine chromicized catgut. The bullæ do not have a mucous membrane, and healing occurs by first intention. The method is preferred to excision of the pulmonary lobe or lobule containing the bulla, for it does not entail the sacrifice of any lung tissue or promote overdistension of the remaining lung.

British Medical Association News.

ANNUAL MEETING.

THE annual meeting of the New South Wales Branch of the British Medical Association was held at the Robert H. Todd Assembly Hall, British Medical Association House, 135 Macquarie Street, Sydney, on March 28, 1957, DR. E. F. THOMSON, the President, in the chair.

ANNUAL REPORT OF THE COUNCIL.

The annual report of the Council was taken as read and received on the motion of Dr. G. L. Howe, seconded by Dr. T. Y. Nelson. After the report had been commented on by the President, it was adopted on the motion of Dr. G. L. Howe, seconded by Dr. T. Y. Nelson.

The annual report is as follows:

The Council presents the following report on the work of the Branch for the year ended March 28, 1957.

Membership.

The membership of the Branch is now 4014, as against 3905 at the date of the last report. The additions have included 180 elections, re-elections and resumptions, and 106 removals into the area of the Branch; while the losses have included 19 by resignation, 96 removals out of the area of the Branch, 20 by default in payment of subscription, and 42 by death. The losses by death were as follows: Dr. C. A. Verco, Dr. D. F. Finlay, Dr. H. H. Jamieson, E.D., Dr. H. W. Palmer, Dr. W. L. Kirkwood, O.B.E., V.D., Dr. W. F. Burfitt, Dr. R. C. Apps, Dr. L. May, D.S.O., M.C., Dr. L. J. Jagers, Dr. K. Byrne, Dr. H. B. Williams, Dr. R. Scot Skirving, Dr. C. W. Luscombe, Dr. C. N. Douglas, Dr. D. R. Brown, M.C., Dr. E. B. H. Brotchie, Dr. C. B. Hudson, Dr. M. Allen, Dr. G. B. Lowe, Dr. H. C. R. Darling, Dr. J. A. Bassetti, Dr. H. Sheldon, Dr. T. D. Hughes, Dr. F. R. Featherstone, Dr. W. J. Griffiths, Dr. L. J. Woodland, Dr. E. O. Pockley, Dr. M. F. Deck, Dr. W. A. Dunn, Dr. John Hughes, Dr. Mary B. Burfitt, Dr. H. D. Matthews, Dr. L. J. A. Parr, Dr. H. C. Adams, Dr. C. C. Ross, Dr. J. Malcolm, Dr. P. N. Grieve, Dr. E. S. Holloway, Dr. M. F. O'Reilly, Dr. John Foley, Dr. J. R. Black, Dr. W. E. Shayler.

Meetings.

Ten ordinary general meetings of the Branch (including the annual general meeting), three extraordinary general meetings of the Branch, and ten clinical meetings were held. The average attendance was 77.

Seven ordinary general meetings were held in conjunction with meetings of the special groups, namely: April 26, with the Section of Neurology, Psychiatry and Neurosurgery and the Section of Medicine; May 31, with the Section of Surgery, the Orthopædic Group (British Medical Association) and the Section of Neurology, Psychiatry and Neurosurgery; June 28, with the Section of Surgery and the Section of Radiology; July 26, with the Section of Pædiatrics, the Oto-Laryngological Society of Australia (New South Wales section) (formerly the Oto-Rhino-Laryngological Society of New South Wales) and the Section of Pathology; August 30, with the Section of Obstetrics and Gynæcology and the Section of Neurology, Psychiatry and Neurosurgery; September 27, with the Section of Anæsthesia, the Section of Pathology and the Section of Medicine; November 29, with the Section of Pædiatrics, the Australian Association of Physical Medicine (British Medical Association) and the Orthopædic Group (British Medical Association). Nineteen papers were presented at these meetings.

The clinical meetings were held at the Rachel Forster Hospital for Women and Children, Royal North Shore Hospital, Royal Prince Alfred Hospital, Royal Alexandra Hospital for Children, Saint Vincent's Hospital, Lewisham Hospital, Sydney Hospital, Royal Hospital for Women, Saint George Hospital and the Psychiatric Clinic at Broughton Hall.

At the extraordinary general meeting on June 6 Dr. P. L. Baseley, Senior Medical Officer, Commonwealth Department of Health, gave an address on "The Salk Vaccine". An extraordinary general meeting was held on November 2 when Professor Howard Rusk, Director of the Institute of Physical Medicine and Rehabilitation, Bellevue Medical Centre, New York University, gave an address on "Rehabilitation". Dr. Rusk also showed two films, "Chemopallidectomy" and "Medical Horizons". At the ordinary general meeting on December 13, Mr. J. A. Morony, Deputy Comptroller of Prisons, gave an address on "The Rehabilitation of Prisoners in New South Wales", and showed a film "Men without Faces". By-law 4 (annual subscription) was amended at the extraordinary general meeting held on September 6.

The fifth meeting of the Branch to be held in a country town was held at Wollongong on Saturday, October 27, and Sunday, October 28. Forty members attended, and two papers were read. In addition to a scientific programme, social functions were arranged by the South Eastern Medical Association. The Council extends its grateful thanks to the South Eastern Medical Association for its assistance in the organization of the meeting.

An invitation was extended to the fifth and sixth year medical students of the University of Sydney to attend ordinary general meetings, and to sixth year medical students to attend clinical meetings of the Branch.

Clinical Meetings.

During the year the form of the monthly clinical meetings was altered in a number of the hospitals.

It had been suggested to the hospitals that consideration should be given by the honorary medical staffs to the meetings being conducted on the following lines, viz.:

1. The established method of presenting a number of cases to be continued.
2. A few selected cases to be presented before a meeting in a lecture theatre.
3. The meeting to be divided into two parts, one in the form of a general assembly lasting, say, forty-five minutes, at which some subject could be discussed and illustrated by the presentation of a few patients; this to be followed by a similar period in which a limited number of carefully selected patients and/or specimens could be demonstrated in the usual manner.
4. Each hospital to conduct its meeting in special sections each year—for example, one year Medicine, the following year Surgery, and the following year Gynæcology and Obstetrics.
5. Each hospital to present a symposium on a particular subject, contributed to by various members of the staff.
6. Each section of the staff (physicians, surgeons *et cetera*) to present a session lasting about twenty minutes, the patients being available for examination before and after the session.
7. Short talks to be given on various topics by a limited number of the medical staff, this being suitable in gynæcological and obstetrical cases.

Some of the hospitals modified their meetings in accordance with one or other of the above suggestions. It has been left to the hospitals to determine the form of the meetings during the coming year.

Obituary.

On July 15 of last year there passed away in his ninety-seventh year, Dr. Robert Scot Skirving, one of the most revered and cultured members of the profession. In his passing, the profession, on whom he had at all times a great influence, suffered a great loss.

He was President of the New South Wales Branch in 1891-1892. At the time of his death he had been a member of the Branch for seventy-two years.

In the death of Dr. Harry Cecil Rutherford Darling on September 9, 1956, the profession lost a member who had always shown a great interest in the Association. In 1935, he presented a silver cup as a trophy for an annual golf competition amongst members of the Branch.

The late Dr. Rutherford Darling was a member for forty-two years.

Representatives.

The Branch was represented as follows:

1. Council of the British Medical Association (1955-1958): Dr. Isaac Jones.
2. Annual Representative Meeting, British Medical Association, Brighton, July, 1956. Representatives: Dr. R. R. Winton, Dr. B. R. Morey and Dr. Baden R. Cooke.
3. Associated Council for Health: Dr. L. W. Wing and Dr. T. M. Clouston.
4. Florence Nightingale Memorial Committee of Australia: Dr. A. M. McIntosh.
5. New South Wales Institute of Dietitians: Dr. K. S. Harrison.
6. New South Wales Bush Nursing Association: Dr. E. F. Thomson.

7. Federal Council of the British Medical Association in Australia: Dr. W. F. Simmons, Dr. R. H. Macdonald, O.B.E., Dr. A. J. Murray, O.B.E., and Dr. E. F. Thomson.
8. New South Wales Institute of Hospital Almoners: Dr. R. A. R. Green.
9. The Ophthalmic Association, Limited: Dr. E. V. Waddy Pockley.
10. New South Wales College of Nursing: Dr. E. F. Thomson.
11. New South Wales Association for Mental Health: Dr. A. T. Edwards.
12. Australasian Medical Publishing Company, Limited: Dr. W. F. Simmons, Dr. W. L. Calov, and Professor L. F. Dods, M.V.O.
13. New South Wales Post-Graduate Committee in Medicine: Dr. A. C. Thomas, Dr. E. F. Thomson and Dr. S. R. Dawes.
14. The Flying Doctor Service of Australia: Dr. George Bell, O.B.E. Deputy Representative: Dr. J. G. Hunter.
15. Hospitals Contribution Fund of New South Wales: Dr. Hugh Hunter.
16. St. John Ambulance Association: Dr. E. F. Thomson.
17. Special Departmental Committee for Investigation of Maternal Deaths: Dr. E. A. Tivey. Alternative Representative: Dr. M. H. Eliot-Smith.
18. Standards Association of Australia: (i) Institutional Supplies Committee, Dr. S. W. G. Ratcliff; (ii) Sectional Committee on Interior Illumination of Buildings, Dr. J. Davis; (iii) Committee of Standards of Laboratory Glassware and Volumetric Glassware, Dr. F. S. Hansman; (iv) New South Wales Committee on Protective Occupational Clothing, Dr. J. H. Blakemore; (v) Paint and Varnish Subcommittee No. 8, Dr. J. H. Blakemore; (vi) New South Wales Committee on Eye Protection, Dr. J. Davis; (vii) Sectional Committee on Measuring Cups and Spoons, Dr. W. W. Ingram; (viii) New South Wales Committee on Industrial Respiratory Protective Devices, Dr. W. E. George.
19. Medical Officers' Relief Fund (Federal): Local Committee of Management for New South Wales, Dr. A. M. McIntosh, Dr. A. J. Murray, O.B.E., and Dr. R. H. Macdonald, O.B.E.
20. Medical Appointments Advisory Committee (Hospitals Commission of New South Wales): Dr. B. T. Edye.
21. New South Wales Medical Board: Dr. J. R. Ryan.
22. New South Wales Examining Council for Medical Technology (Hospitals Commission of New South Wales): Dr. E. F. Thomson and Dr. F. S. Hansman.
23. Medical Finance, Limited, Board of Directors: Dr. E. A. Tivey, Dr. A. C. Thomas, Dr. George Bell, O.B.E., and Dr. G. C. Halliday.
24. Coordinating Council of the Physically Handicapped: Dr. R. A. R. Green.
25. Road Safety Council of New South Wales: Dr. E. F. Thomson.
26. Road Safety Council of New South Wales (i) Committee to examine and report on matters dealing with road accidents involving motor cycles: Dr. I. D. Miller.
27. Federal Medical War Relief Fund, Local Committee of Management: Dr. R. H. Macdonald, O.B.E., Dr. A. C. Thomas and Dr. A. J. Murray, O.B.E.
28. Florence Nightingale Memorial Committee of Australia: Dr. B. T. Edye.
29. National Association for the Prevention of Tuberculosis in Australia (New South Wales Division): Dr. W. Cotter B. Harvey.
30. Committee for the Placement of Resident Medical Officers: Dr. A. M. McIntosh.
31. Australian Physiotherapy Association: Dr. B. G. Wade.
32. New South Wales State Cancer Council: Dr. B. T. Edye.
33. Department of Motor Transport (Committee to consider the question of the adoption of chemical tests of body fluids to determine whether a driver is under the influence of alcohol): Dr. F. S. Hansman.
34. Medico-Pharmaceutical Liaison Committee: Dr. K. S. Jones, Dr. G. L. Howe and Dr. W. F. Simmons.
35. Department of Public Health, Poisons Advisory Committee: Dr. A. W. Morrow, D.S.O.
36. State Medical Advisory Committee: Dr. E. F. Thomson. Alternative Representative: Dr. J. G. Hunter.
37. Fluoridation of Drinking Water, Department of Public Health Advisory Committee: Dr. D. G. Hamilton.
38. New South Wales Association of Medical Records Librarians, Advisory Committee: Dr. T. Y. Nelson.
39. Board of Optometrical Registration: Dr. J. Davis.
40. Therapeutic Substances Advisory Committee: Dr. A. W. Morrow, D.S.O.

Council.

(*a*) The attendance of members of the Council and of the standing committees was as set out in the accompanying table.

(*b*) The representatives of the Local Associations of members appointed on the invitation of the Council to attend the regular quarterly meetings of the Council were as

ATTENDANCE AT COUNCIL AND STANDING COMMITTEE MEETINGS.

	Council.	Committees.					
		Executive and Finance.	Organization and Science.	Medical Politics.	Hospitals.	Ethics.	Public Relations.
ALEXANDER, M. S.	16	12	—	—	—	—	—
BARRY, H. C.	11	—	—	—	4	—	—
BLACKBURN, SIR CHARLES	10	—	—	—	—	3	—
BROWN, D. A.	15	—	—	8	—	—	2
CLOUSTON, T. M.	17	—	—	9	—	—	—
COOK, B. A.	14	—	—	—	3	—	2
EDYE, B. T.	14	—	—	—	—	3	—
HOWE, G. L. President-Elect	15	11	4	9	4	2	2
ISBISTER, CLAIR	14	—	5	—	—	—	—
JONES, K. S.	15	—	—	11	—	—	1
LAVERTY, C. R. M. Honorary Secretary	17	13	4	11	4	3	3
LYTTLE, J. P.	6	—	—	6	—	—	—
MACDONALD, R. H.	16	14	—	—	—	3	—
MORROW, A. W.	11	2[2]	4	—	3	—	—
MURRAY, A. J.	16	12	—	—	—	2	—
NELSON, T. Y.[1]	12	9	—	—	3	3	—
PAUL, J. A.	12	—	3	—	2	—	2
RAWLE, K. C. T.	10	—	—	—	2	—	—
STUCKEY, E. S.	16	—	—	11	—	—	—
THOMSON, E. F. President	17	13	3	7	4	2	3
TOMLINSON, P. A.	14	—	—	—	3	—	—
WARDEN, D. A.	16	—	—	12	—	—	—
WILLIS, H. H. Honorary Treasurer and Past President	17	14	5	10	2	2	2
WING, L. W.	16	—	—	10	—	—	—
Meetings held	17	14	5	12	4	3	3

[1] Leave of absence, June 1, 1956, to September 20, 1956.
[2] Co-opted member, August 14, 1956.

follows: Dr. A. W. Raymond (Blue Mountains), Dr. M. M. Ramsden (Border), Dr. J. A. Paul (Brisbane Water District), Dr. L. Abramovich (Canterbury-Bankstown), Dr. B. W. Monahan (Central Southern), Dr. G. N. M. Aitkens (Central Western), Dr. H. E. Masters (Eastern District), Dr. P. D. Hipsley (Eastern Suburbs), Dr. W. P. H. Dakin (Far South Coast and Tablelands), Dr. L. O. Rutherford (Hunter Valley), Dr. K. W. Alexander (Illawarra Suburbs), Dr. T. D. Wilkins (Kuring-gai District), Dr. S. Shineberg (Northern District), D. J. Gribben (North Eastern), Dr. L. E. Goldsmith (Southern District), Dr. H. G. Rich (South Eastern), Dr. K. C. Mallett (South Sydney), Dr. R. G. Bligh (Warringah District), Dr. S. R. Dawes (Western), Dr. R. J. J. Speight (Western Suburbs).

Library.

Dr. A. M. McIntosh was appointed to the position of Honorary Librarian.

Visitors to the Library	7,433
Books lent to members	1,352
Journals lent to members	4,893
Books added to the Library	156
Journals added to the Library	4

It is gratifying to record that the number of visitors to the Library, and the number of books and journals borrowed, show an increase in the figures for the same period last year.

The Librarian, Miss M. Rolleston, compiled a report for presentation to the Council of the Association, covering a five-year period, 1952-1956, in which statistical information and comments were given regarding the functions of the Branch Library and its services to members and allied and scientific libraries.

Since Miss Rolleston's visit to overseas libraries in 1952, until the end of 1956, the period of review on which the report is based, it is interesting to note that the number of visitors to the Library has maintained a comparatively high and steady level, despite the fact that most of the main hospitals in the metropolitan area have now well-established libraries, with full-time librarians, thereby creating additional library facilities for the honorary and resident staffs.

As an indication of the extent to which the inter-library loan services operate, the report shows that 79 different libraries availed themselves of this service during the five-year period, borrowing from the Branch Library 4,065 items, 472 of which were mailed. Alternatively, the Branch Library borrowed material from 25 different libraries, amounting to a total of 424 items, 106 of which were mailed.

The number of periodicals added by donation and purchase over the past five years has increased by at least 100 titles, and at present 486 periodicals are received currently, 267 by donation and 219 by purchase.

Since the photocopying service was established in the Library in November, 1953, 230 requests have been received for 280 articles to be photographed, representing 1,768 prints.

As a result of applying for, and being granted, membership of the Medical Library Association (United States of America), members of which are entitled to draw on a pool of duplicate material, it has been possible to obtain valuable material, otherwise unprocurable unless at high cost, consisting of back files, missing issues of journals required to complete volumes *et cetera*. In exchange for this material, unwanted files held by the Branch Library, a list of which is first circulated to libraries throughout the Commonwealth, were made available to overseas members of the Exchange. This material comprised 958 unbound issues and 24 volumes.

Reference was also made in the report to the increasing number of donations, some by bequests in wills which were being made to the Branch Library by members, and although in some cases it might duplicate material already included in the files, in such instances the items are listed and the lists subsequently circulated to other libraries for checking with their "Want" records.

In November, 1955, the Council accepted the proposal of the New South Wales State Cancer Council to establish its Central Library in conjunction with the Association Library.

Under this arrangement authority was given to the Post-Graduate Committee in Medicine to proceed in the matter of the distribution of books and periodicals on cancer to certain libraries in New South Wales, including the Branch Library. The distribution to us has now been made and, to date, comprises five periodicals, four monographs and 15 books.

It is the wish of the Council of the Association to acknowledge with grateful thanks donations from the following: The Editor, THE MEDICAL JOURNAL OF AUSTRALIA; Abbott Laboratories; American College of Surgeons; Blood Transfusion Office, Australian Red Cross Society; British Empire Cancer Campaign; Dr. J. C. Belisario; Dr. D. G. Carruthers; Central Medical Library, Melbourne; The Colonial Sugar Refining Company Limited; The Institute of Engineers; the Estate of the late Dr. J. Eli Webb; the estate of the late Dr. H. C. Rutherford Darling; the estate of the late Dr. Robert Scot Skirving; The Medical and Chirurgical Faculty of the State of Maryland Library; Metropolitan Life Insurance Company, New York; Dr. M. Naomi Wing; International Anæsthetic Research Society; Dr. J. H. Halliday; Legislative Committee of American League against Epilepsy; National Nephrosis Foundation, Inc., New York; National Institute of Health Library, Bethesda, Maryland; Post-Graduate Committee in Medicine, University of Sydney; Dr. Basil Riley; Dr. M. R. Flynn; Dr. R. J. Silverton; Dr. K. W. Starr; Dr. F. G. N. Stephens; United States Armed Forces Medical Library; United States Information Library; University of Melbourne; Vanderbilt University School of Medicine Library, Tennessee; the College of Radiologists (Australia and New Zealand); the Oto-Laryngological Society of Australia, New South Wales Section (British Medical Association); the Section of Medicine, and the Section of Obstetrics and Gynæcology.

Affiliated Local Associations of Members.

Blue Mountains (affiliated 1944): *Chairman*, Dr. A. K. Jones; *Honorary Secretary*, Dr. N. Larkins. Membership 26. Five meetings were held.

Border (affiliated 1908): *Chairman*, Dr. G. W. Smith; *Honorary Secretary*, Dr. B. M. Twomey. Membership 22. Four meetings were held.

Brisbane Water District (affiliated 1948): *Chairman*, Dr. G. C. Duncan; *Honorary Secretary*, Dr. W. A. Hillman. Membership 23. Five meetings were held.

Broken Hill (affiliated 1942): *Honorary Secretary*, Dr. Franziska Schlink.

Canterbury-Bankstown (affiliated 1930): *Chairman*, Dr. J. T. Moss; *Honorary Secretary*, Dr. A. Rumore. Membership 75. Ten meetings were held.

Central Northern (affiliated 1910): *Chairman*, Dr. J. Sullivan; *Honorary Secretary*, Dr. C. A. Horn. Membership 113. Four meetings were held.

Central Southern (affiliated 1909): *Chairman*, Dr. J. H. Coles; *Honorary Secretary*, Dr. F. B. Uther. Membership 69. Six meetings were held.

Central Western (affiliated 1910): *Chairman*, Dr. J. M. Banks; *Honorary Secretary*, Dr. K. S. M. Brown. Membership 72. Three meetings were held.

Eastern District (affiliated 1913): *Chairman*, Dr. J. R. O. Roger; *Honorary Secretary*, Dr. H. E. Masters. Membership 41. Two meetings were held.

Eastern Suburbs (affiliated 1911): *Chairman*, Dr. J. G. Radford; *Honorary Secretary*, Dr. E. A. Jackson. Membership 168. Six meetings were held.

Far South Coast and Tablelands (affiliated 1935): *Chairman*, Dr. D. S. Thomson; *Honorary Secretary*, Dr. J. D. F. O'Keefe. Membership 21. Four meetings were held.

Hunter Valley (affiliated 1947): *Chairman*, Dr. G. R. Sippe; *Honorary Secretary*, Dr. A. T. Clarke. Membership 52. Six meetings were held.

Illawarra Suburbs (affiliated 1913): *Chairman*, Dr. J. S. Quill; *Honorary Secretary*, Dr. K. W. Alexander.

Kuring-gai District (affiliated 1929): *Chairman*, Dr. T. D. Wilkins; *Honorary Secretary*, Dr. R. C. White. Membership 100. Four meetings were held.

Northern District (affiliated 1911): *Chairman*, Dr. H. M. Hollingworth; *Honorary Secretary*, Dr. J. H. Priestley. Membership 91. Three meetings were held.

North Eastern (affiliated 1913): *Chairman*, Dr. G. S. Calnan; *Honorary Secretary*, Dr. N. J. Rogers. Membership 71. Two meetings were held.

Nepean Hawkesbury (affiliated 1957): *Chairman*, Dr. W. F. J. Cammack; *Honorary Secretary*, Dr. J. J. Bain. Membership 25.

South Eastern (affiliated 1914): *Chairman*, Dr. M. C. McKinnon; *Honorary Secretary*, Dr. F. W. Walton.

Southern District (affiliated 1909): *Chairman*, Dr. L. E. Goldsmith; *Honorary Secretary*, Dr. J. L. Tunley.

South Sydney (affiliated 1909): *Chairman*, Dr. K. C. Mallett. *Honorary Secretary*, Dr. A. R. G. Gordon.

Warringah District (affiliated 1929): *Chairman*, Dr. R. T. C. Hughes; *Honorary Secretary*, Dr. D. C. Williams. Membership 198. Four meetings were held.

Western (affiliated 1908): *Chairman*, Dr. C. S. Colvin; *Honorary Secretary*, Dr. S. R. Dawes. Membership 113. Three meetings were held.

Western Suburbs (affiliated 1908): *Chairman*, Dr. S. Lackey; *Honorary Secretary*, Dr. Warren Smith. Membership 133. Four meetings were held.

Nepean-Hawkesbury Medical Association.

On January 8, 1957, approval was given by Council to the formation of a new Local Association to be known as the Nepean-Hawkesbury Medical Association. The area of the Local Association includes the districts of Penrith and Springwood.

Annual Meeting of Delegates.

The forty-third annual meeting of delegates of the affiliated local associations of members with the Council was held on Friday, September 28, 1956.

The delegates present at the meeting were as follows: Blue Mountains, Dr. A. W. Raymond; Border, Dr. A. B. Hogan; Canterbury-Bankstown, Dr. L. Abramovich; Central Southern, Dr. B. W. Monahan; Central Northern, Dr. W. P. McLaughlin; Central Western, Dr. J. M. Banks; Eastern Suburbs, Dr. J. R. Sands; Eastern District, Dr. H. E. Masters; Far South Coast and Tablelands, Dr. W. P. H. Dakin; Hunter Valey, Dr. A. J. Clarke; Illawarra Suburbs, Dr. K. W. Alexander; Kuring-gai District, Dr. C. Warburton; Northern District, Dr. R. J. Jackson; North Eastern, Dr. J. Gribben; Southern District, Dr. J. S. Storey; South Eastern, Dr. J. B. Maloney; South Sydney, Dr. C. H. Jaede; Warringah District, Dr. R. G. Bligh; Western, Dr. G. B. Downes; Western Suburbs, Dr. R. J. J. Speight.

Special Groups for the Study of Special Branches of Medical Knowledge.

Allergy (inaugurated 1947): *Chairman*, Dr. R. S. Steel; *Honorary Secretary*, Dr. D. O. Cross. Membership 16. Four meetings were held.

Anæsthesia (inaugurated 1934): *Chairman*, Dr. R. B. Speirs; *Honorary Secretary*, Dr. C. A. Sara. Membership 69. Five meetings were held, one in conjunction with a meeting of the Branch.

Medicine (inaugurated 1924): *Chairman*, Dr. R. S. Steel; *Honorary Secretary*, Dr. J. Isbister. Membership 83. Seven meetings were held, two in conjunction with meetings of the Branch.

Neurology, Psychiatry and Neurosurgery (inaugurated 1924): *Chairman*, Dr. H. J. Prior; *Honorary Secretary*, Dr. C. Radeski. Membership 96. Ten meetings were held, three in conjunction with meetings of the Branch.

Obstetrics and Gynæcology (inaugurated 1925): *Chairman*, Dr. F. A. Bellingham; *Honorary Secretary*, Dr. A. S. B. Studdy. Membership 99. Five meetings were held, one in conjunction with a meeting of the Branch.

Occupational Medicine (inaugurated 1952): *Chairman*, Dr. G. C. Smith; *Honorary Secretary*, Dr. D. G. Noble. Membership 27. Six meetings were held.

Orthopædic Group (British Medical Association) (inaugurated 1923): *Chairman*, Dr. G. S. Colvin; *Honorary Secretary*, Dr. A. I. Rhydderch. Membership 26. Nine meetings were held, two in conjunction with meetings of the Branch.

The Oto-Laryngological Society of Australia, New South Wales Section (formerly The Oto-Rhino-Laryngological Society of New South Wales) (inaugurated 1924): *Chairman*, Dr. A. B. K. Watkins; *Honorary Secretary*, Dr. V. D. Bear. Membership 47. Six meetings were held, one in conjunction with a meeting of the Branch.

Pædiatrics (inaugurated 1924): *Chairman*, Dr. E. S. Stuckey; *Honorary Secretary*, Dr. D. Kerr Grant. Membership 104. Eight meetings were held, two in conjunction with meetings of the Branch.

Pathology (inaugurated 1924): *Chairman*, Dr. J. L. Holme; *Honorary Secretary*, Dr. R. E. J. ten Seldam. Membership 86. Eight meetings were held, two in conjunction with meetings of the Branch.

Radiology (inaugurated 1926): *Chairman*, Dr. D. G. Maitland; *Honorary Secretary*, Dr. B. E. Frecker. Membership 108. Six meetings were held, one in conjunction with a meeting of the Branch.

Surgery (inaugurated 1925): *Chairman*, Dr. J. Steigrad; *Honorary Secretary*, Dr. K. S. Jones. Membership 42. Six meetings were held, two in conjunction with meetings of the Branch.

Urology (inaugurated 1940): *Chairman*, Dr. D. C. Trainor; *Honorary Secretary*, Dr. H. G. Cummine.

Congratulations.

Congratulations were extended to Dr. K. W. Starr and to Dr. J. G. Hunter, Medical Secretary of the New South Wales Branch and General Secretary, Federal Council of the British Medical Association in Australia, when they each had conferred upon them by Her Majesty the Queen the Honour of Companion of the Most Distinguished Order of St. Michael and St. George.

Federal Council of the British Medical Association in Australia.

The Federal Council of the British Medical Association in Australia met in Melbourne on August 27-30, 1956, and in Sydney on February 22-25, 1957. On both occasions the Branch was represented by Dr. A. J. Murray, Dr. E. F. Thomson, Dr. R. A. Macdonald and Dr. W. F. Simmons.

British Medical Association: New Zealand Branch.

The Biennial Conference of the New Zealand Branch of the British Medical Association was held at Wellington on February 19-22, 1957.

Dr. E. F. Thomson, President, was appointed to represent the New South Wales Branch at the Conference.

By-Laws.

By-Law 4 (Annual Subscription) was amended at an extraordinary general meeting held on September 6, 1956. The effect of the amendment was to increase the annual subscription of each member by £2 2s., except in the case of the member over seventy years of age or permanently retired, when an increase of £1 1s. was made, and in the case of members serving with the Armed Forces of the British Empire, when no increase was made.

British Medical Association Lectures.

Lectures were arranged as follows:

Western Medical Association, Dubbo, March 27, 1956: Dr. D. G. Hamilton—"Fits and Convulsions in Childhood".

Eastern District Medical Association, Port Macquarie, April 22, 1956: Dr. R. J. Walsh—"The Modern Uses of Blood and Blood Products" and "The Resuscitation of the Severely Burnt Patient".

Northern District Medical Association, Armidale, September 16, 1956: Dr. E. S. Stuckey—"Emergency Surgery in Childhood".

Annual Branch Prize for an Essay on a Scientific Subject.

Although introduced over three years ago, the first award was made in connexion with the subject for the year 1956, viz.: "Infective Hepatitis; its Incidence and its Sequelæ". There were two entrants, and in each case the judges commended the papers presented.

The award was made to Dr. C. E. Marshall, a member of the New South Wales Branch.

Robert Scot Skirving Memorial Fund.

In consideration of the great services rendered by the late Dr. Robert Scot Skirving to medicine and the medical profession in Australia, the Council of the New South Wales Branch of the British Medical Association has decided to inaugurate a fund in order to perpetuate his memory by the establishment of an annual prize, which will be awarded on the results of the final degree examination in Medicine at the University of Sydney.

It is confidently expected that many members will welcome the opportunity of showing their appreciation of the services of one who will always be remembered as an outstanding personality in the history of medicine in Australia.

Public Relations.

The Committee on Medical Sociology and Research was replaced by the Public Relations Committee.

Towards the end of 1956, visits were made to a number of Local Associations by members of the Public Relations Committee of Council. The purpose of the visits was to seek the views of Local Associations on the matter of public relations and to inform them of Council's intentions in regard thereto.

There still remain some Local Associations to be visited.

During the year, the work of popular education, which has been conducted since 1940, was continued. Radio talks (B.M.A. Spokesman) were supplied for several of the regular programmes of the Australian Broadcasting Commission. The Association was represented at a studio experiment in adapting medical subjects for the Australian Broadcasting Commission television services. Assistance was given to the Press and broadcasting stations in their use of articles *et cetera* dealing with health and medical topics.

National Health Service.

Pensioner Medical Service.

The agreement between the Federal Council and the Commonwealth Government having expired in October, 1955, the Federal Council sought the views of the Branches in regard to the terms and conditions applicable to any new agreement. The Council referred the matter to Local Associations, and from the replies received was able to inform the Federal Council of the views of members in New South Wales. Briefly the decision of the Council was to recommend to the Federal Council that the profession continue to work at the present rates without an agreement for a period of six months, but that Federal Council should continue to press for an increase in rates.

Medical Benefits Scheme.

A special subcommittee was appointed to consider the anomalies in the present schedules of medical benefits under the National Health Scheme. As a result of its work, the subcommittee was able to forward to Federal Council a large number of amendments which it proposed should be made to the schedules.

At the Annual (1956) Meeting of Delegates of Local Associations with Council, a number of resolutions were adopted recommending increased benefits for certain medical services. Following their adoption by Council, they were forwarded to Federal Council.

Hospital Policy.

A copy of the Hospital Policy of the Branch was forwarded to all members on August 20, 1956.

In addition, copies were forwarded to the Hospitals Commission of New South Wales, the teaching hospitals, metropolitan non-teaching hospitals, country base and a number of district hospitals and the Federal Council.

As the main provisions of the Hospital Policy in regard to the classification of patients and the charging of public ward patients who are insured with medical benefits fund organizations were not accepted by the State Minister for Health, a request was made of the Premier to receive a delegation from Council. However, the Premier considered the matter was one for the Minister. The whole of the policy is under discussion with the Hospitals Commission of New South Wales.

Staffing of District Hospitals.

In the course of the discussion on hospital policy with the Hospitals Commission of New South Wales, particular attention was paid to the staffing of district hospitals.

It was agreed that the Council should submit to the Hospitals Commission proposals for the staffing of two metropolitan district hospitals which are to open in the near future. Proposals were submitted to the Hospitals Commission which aimed at keeping a balance of specialists and general practitioners on a classified staff.

Salaries of Specialists in Hospitals.

Following consultation with representatives of the general teaching hospitals, submissions were made to the Hospitals Commission concerning the salaries which should be paid to specialists holding full-time appointments in public hospitals.

Boards of Directors of Hospitals.

Whereas some few years ago Boards of Directors of Hospitals consisted of directors elected by subscribers and those appointed by the Government, within recent times the majority of Boards have consisted of appointed members. A request was made of the Minister for Health for the re-establishment of the democratic election of Boards of Directors. In his reply the Minister advised that he could see no prospect whatsoever of the proposal being incorporated as one of policy at the present time.

He considered that election by subscribers would necessitate the setting up of an organization for this purpose, which would be very difficult.

Company Formation by Medical Practitioners.

At its last meeting held on February 22-25, 1957, the Federal Council of the British Medical Association in Australia adopted the following resolution:

> That no objection be taken to medical practitioners forming themselves into companies for the practice of medicine provided that the following conditions are fulfilled, viz.:—
>
> 1. Membership of the Company shall be confined to medical practitioners actively engaged in medical practice.
> 2. No member shall practise his profession as a member of a company or conduct his practice in association with such company unless the control of the company is at all times completely in the hands of registered medical practitioners.
> 3. The Governing Director shall at all times be a registered medical practitioner.

The resolution was adopted unanimously following reference to all Branches. It has the complete support of the Council of the New South Wales Branch.

There is, however, no objection to medical practitioners being associated with lay persons in the formation of companies for the purpose of acquiring properties in which such practitioners may carry on their practices.

Appearance of Members in Television Programmes.

At its meeting on February 22-25, 1957, the Federal Council decided that any member of the Association approached to appear in a television programme must first obtain the approval of the Branch Council for such appearance and for the subject matter of the session. Provided such approval is obtained, anonymity need not necessarily be observed. The previous decision of Federal Council in regard to anonymity no longer stands.

The Federal Council, recognizing that public education on selected health matters is eminently desirable, hopes to establish a close liaison between the British Medical Association and the broadcasting authorities to control the selection of subjects and the scope of material presented to the public on television. In this the Federal Council has the full support of the Council.

Pethidine.

At its meeting in August, 1955, the Federal Council, at the request of the Director-General of Health, gave official sponsorship for the setting up of a joint Committee of the Commonwealth Department of Health and the Federal Council for the purpose of ascertaining the reasons for the increase in the prescribing of pethidine.

It is to be noted that the Australian consumption of pethidine per million of the population is conspicuously in excess of that in any other country and that this excess is not offset by any proportional reduction in the consumption of morphine.

The Committee communicated with a number of practitioners with a view to ascertaining the conditions for which pethidine was prescribed, and following receipt of their replies, submitted a report for the consideration of the Branches. The Committee recommended to Federal Council that consideration should be given not only to the question of pethidine, but to the whole question of addiction.

On consideration of the Committee's report, the Council recommended to Federal Council that:

1. It support the definition of drug addiction by the World Health Organization. This definition reads as follows:

   > Drug addiction is a state of periodic or chronic intoxication, detrimental to the individual and to society, produced by the repeated consumption of a drug (natural or synthetic). Its characteristics include—
   >
   > (i) an overpowering desire or need (compulsion) to continue taking a drug and to obtain it by any means;
   >
   > (ii) a tendency to increase the dose;
   >
   > (iii) a psychic (psychological) and sometimes a physical dependence on the effects of the drug.

2. It support the principle of the notification of drug addiction.
3. It forward a letter to members of the profession in Australia in reference to the matter of drug addiction.
4. It take appropriate steps to have reduced the maximum quantities of drugs of addiction allowed under the general pharmaceutical benefits.

The Federal Council has advised that:

1. It has approved of the principle of the compulsory notification of addiction to dangerous drugs.
2. It approves of the definition of drug addiction by the World Health Organization.
3. It has decided that a letter referring to drug addiction should be compiled in the future and forwarded to all members of the profession.
4. It is of the opinion that pethidine in tablet form should be removed from the list of pharmaceutical benefits under the *National Health Act*.
5. It is further of the opinion that in the event of pethidine in tablet form remaining on the list of pharmaceutical benefits under the *National Health Act*, the maximum number prescribable should be reduced from twenty-five to ten.

Heroin.

At its meeting early in 1956 the Federal Council decided to refer the matter of the banning of heroin back to the Branches, with the request that members be consulted in order to obtain their views on the matter.

Following replies received from Local Associations to a letter addressed to them on April 23, 1956, seeking the views of their members, it was decided to inform the Federal Council that, generally speaking, members were against the banning of heroin. However, Council felt that it would be wise to withhold a decision on the matter for a further period of twelve months, and recommended to Federal Council that action be taken on these lines.

Following its meeting in August, 1956, the Federal Council requested the Minister for Health to give consideration to the removal of the ban on the importation and use of heroin.

The Minister, in his reply, referred to the fact that 72 countries now prohibited its use, eight favoured and were expected shortly to impose the prohibition, and only six, apparently, intended to continue using it. Of the manufacturing countries, the United Kingdom had prohibited its export. In some countries in which the standard of medical practice may be regarded as comparable to our own, heroin had not been used for many years. In the United States, where heroin had been prohibited in medical practice for over thirty years, there had not been a single request for its release and the American Medical Association was vigorously opposed to its return.

The Minister considered that a decision to revoke the Commonwealth and State laws affecting the prohibition of importation and manufacture of heroin would entail considerable controversy and embarrassment and would require unanimity amongst all Australian Governments.

In view of the facts upon which the Minister based his opinion and his very definite attitude towards the whole problem of heroin, Federal Council decided against any further action at this juncture.

Tetanus.

Towards the end of last year, its representative on the National Health and Medical Research Council, Dr. W. F. Simmons, forwarded to Federal Council a letter dealing with the tetanus problem, which the South Australian Branch had asked him to place before the National Health and Medical Research Council.

Following receipt of a copy of this communication from the Federal Council, the Council of the New South Wales Branch decided to ask Federal Council to support a plan for the active immunization against tetanus of the whole civilian population and emphasized the need for persons so immunized having a personal record of their immunization. At its meeting in February of this year the Federal Council gave support to the proposal.

Medical Practitioners' Act.

(*a*) Registration of practitioners holding alien degrees.

Having regard to all the circumstances, the Council is of the opinion that the following conditions should apply in connexion with the registration of practitioners holding alien degrees:

1. The applicant for registration must be able to express himself adequately in the English language, both orally and in writing.
2. (*a*) He must have passed through a regular graded course of medical study of five or more years' duration, in a school of medicine, such course being recognized as being not lower in standard than that required by the by-laws of the University of Sydney for the degree of Bachelor of Medicine, and
   (*b*) received after due examination from a university, college or other body with which such school of medicine is associated and which is duly recognized for the purpose in such part, a degree or diploma certifying to his ability to practise medicine or surgery.
3. He must be registered in his own country and must not have been deregistered for any misdemeanour.
4. He must pass the final degree examination in the Faculty of Medicine in the University of Sydney, and also an examination in medical ethics.
5. On passing the final degree examination in the Faculty of Medicine, he must be conditionally registered for a period of twelve months, during which time he must act as a resident medical officer in a public hospital or as an assistant to a private practitioner where no hospital appointment is available.

(*b*) Glaucoma.

The *Medical Practitioners' Act* was amended in September, 1956, to provide that a person not registered under the Act shall not give or perform any medical or surgical advice, service, attendance or operation in relation to cancer, tuberculosis, poliomyelitis, epilepsy, diabetes and such other disease or diseases as may be prescribed.

The amendment, however, includes a proviso to the effect that a person not registered under the Act shall not be liable to be prosecuted in respect of anything done or omitted to be done in connexion with these diseases "in the bona fide practice of the religious tenets of any church".

A recommendation has been made to the Minister for Health to have glaucoma included in the list of diseases which an unregistered person may not treat.

Radioactive Substances Bill.

Representations were made to the Minister for Health for New South Wales on three occasions that the Association should be represented directly on the Radiological Advisory Council to be appointed under the Radioactive Substances Bill, which was before the New South Wales Parliament.

The Bill also provided for a medical practitioner to obtain a licence before he could sign a prescription for a radioactive substance.

Whilst Council agreed that there was justification for requiring a doctor to have a licence before he could have in his possession or use or administer any radioactive substance, it considered there was no necessity for a licence before a doctor could prescribe a radioactive substance. On this matter, also, representations were made to the Minister on three occasions. However, the Minister would not accept the Council's submissions on either matter.

Opticians' Act.

Advice was received by Council that consideration was being given to amending the *Opticians' Act* and that a recommendation had been made to the Minister for Health in this regard by the Board of Optometrical Registration that optical dispensing firms shall be registered under the Act and be directly supervised by registered optometrists.

The Council advised the Minister that it was of the opinion that the need for such an amendment did not exist, and in support of this view submitted that:

1. Sight-testing is a necessary function of the ophthalmologist and requires the services of optical dispensing for the provision of glasses.
2. Optical dispensing is regarded as not being a part of optometry, but as an ancillary service to medical practice and as such it is not in the public interest that it should be under the control of a non-medical body.
3. It does not involve the manufacture of lenses, nor the clinical examination of eyes. It consists of recording several facial measurements, selecting a spectacle frame on these measurements, obtaining the appropriate lenses from the manufacturers according to the prescription, and fitting them into the frame. This is a simple routine easily acquired, involving but reasonable care.
4. By confining their activities to the dispensing of prescriptions, optical dispensing firms are in effect under the supervision of the medical profession, and the continual reference of prescriptions by ophthalmologists indicates that a satisfactory standard of efficiency has been maintained.

Police Offences (Amendment) Act.

During the year, a deputation awaited on the Chief Secretary in connexion with the regulations under the *Police Offences (Amendment) Act* governing dangerous drugs, and submitted that:

1. The regulations should not be amended without prior consultation with the medical and pharmaceutical professions.
2. The regulations were harsh, e.g., the accidental omission of the intervals at which a prescription was to be repeated made the prescription null and void. It was suggested that when the time interval was omitted in error, the prescription should be dispensed the first time.
3. Regulation 13 should be re-introduced. It was considered that keeping a record in accordance with Regulation 13, which had been repealed, was quite sufficient. Council considered that there was no need for Schedule 5.

The submissions of Council were not accepted by the Minister.

Treatment of Police Injured in the Course of their Duties.

Following further representations by Council, advice was received from the Department of Health, New South Wales, that approval had been given by the Premier to the arrangement made towards the end of 1954, in respect of hospital and medical treatment of police injured on duty in country towns, being extended to cover police injured on duty in the metropolitan area.

The arrangements provide that:

(a) Police injured on duty may be classified as intermediate ward patients so as to permit honorary medical officers who attend them to charge fees.

(b) The injured member of the force when not admitted to hospital may obtain treatment from his own medical adviser, and

(c) The medical practitioner's fees will be paid on the basis of the rates prescribed in Schedule "H".

The Housing Commission of New South Wales: Tenancy Agreements in Respect of Dwelling Units and Surgeries at Community Housing Centres.

In tenancy agreements completed by medical practitioners in respect of the occupation of units in community centres of the Housing Commission, it is provided that the occupant shall have no rights in regard to the selection of his successor. In effect, this means that the medical practitioner is unable to sell his practice.

Protests have been made to the Minister for Housing in connexion with the matter, but so far without success.

Superannuation for Self-Employed Persons.

Throughout the year a good deal of consideration was given to the matter of superannuation for self-employed persons. A request was made of Federal Council that it prepare a plan for submission to all Branches.

Poisons Act: The Australian Veterinary Association.

The Council gave support to a proposal made by the Australian Veterinary Association that the regulations under the *Poisons Act* should be amended to provide for stricter control of sulphonamides and antibiotics when intended to be used for veterinary, horticultural, stock raising, or poultry farming purposes.

Committee for Placement of Resident Medical Officers.

The number who graduated at the final degree examination in medicine held at the end of 1956 was 144. Of these, 137

NEW SOUTH WALES BRANCH OF THE BRITISH MEDICAL ASSOCIATION.

Balance Sheet as at December 31, 1956.

	£ s. d.	£ s. d.
FIXED LIABILITIES.		
Debentures—		
51—4% Series "A" at £10 each ..	510 0 0	
287—4·65% Series "B" at £50 each	14,350 0 0	
200—4·65% Series "C" at £10 each	2,000 0 0	
	16,860 0 0	
Less Amount Unpaid	54 0 0	
	16,806 0 0	
General Reserve Fund (used in the Branch Business)	1,250 0 0	
		18,056 0 0
CURRENT LIABILITIES.		
Sundry Creditors	2,200 0 5	
Deposits at Call	700 0 0	
Commercial Banking Company of Sydney Limited—Branch and Premises Current Accounts Net	18,960 3 7	
		21,860 4 0
OTHER CREDIT BALANCES.		
Subscriptions Paid in Advance—Suspense Account	104 12 0	
Provision for Taxation	3,098 1 0	
Provision for Painting Building ..	5,600 0 0	
Provision for Long Service Leave	1,850 0 0	
Superannuation Fund Reserve Account, as *per contra*	2,896 12 4	
		13,549 5 4
Accumulated Funds—		
Balance as at December 31, 1955	110,103 0 1	
Add Surplus for Year ended December, 1956—		
Branch £520 15 2		
Less Deficit Premises £143 18 2		
	376 17 0	
		110,479 17 1
		£163,945 6 5

	£ s. d.	£ s. d.
FIXED ASSETS.		
Land and Buildings—British Medical Association House, at Cost *less* Depreciation	126,312 9 0	
Library, at Cost *less* Depreciation	8,929 8 2	
Office Furniture and Equipment, at Cost *less* Depreciation ..	2,153 9 10	
Debentures in Other Companies—Australasian Medical Publishing Company Limited—Face Value	13,400 0 0	
Deposit on Debentures—Australasian Medical Publishing Company Limited	154 0 1	
Commonwealth Treasury Bonds, at Face Value	6,000 0 0	
		156,949 7 1
CURRENT ASSETS.		
Sundry Debtors (after making Provision for Doubtful Debts, Sundry Tenants, Rents *et cetera*)	2,882 17 11	
Cash on Hand	12 17 10	
		2,895 15 9
OTHER DEBIT BALANCES.		
Prepaid Insurances, Rates *et cetera*	1,203 11 3	
Superannuation Fund Investment Account, as *per contra*	2,896 12 4	
		4,100 3 7
		£163,945 6 5

Sydney,
February 21, 1957.

E. F. THOMSON, President.
H. H. WILLIS, Honorary Treasurer.

We have examined the foregoing Balance Sheet with the Books of Account of the New South Wales Branch of the British Medical Association, and having obtained all the information and explanations we have required, we are of the opinion that such Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Company's affairs according to the best of our information and the explanations given to us and as shown by the Books of the Company. In our opinion, the Register of Members and other records which the Company is required to keep by the New South Wales Companies Act, 1936, or by its Articles have been properly kept.

F. W. DUESBURY & Co.,
Chartered Accountants (Aust.).

had completed the six years' course at the University of Sydney, whilst seven with alien diplomas had completed the last three years of the course. Of the 137, two did not desire appointments, and of the seven with alien diplomas four did not desire appointments. There were thus left 138 graduates for appointment. Of these, 78 were appointed to the teaching hospitals by a Conjoint Committee of the Teaching Hospitals and the University of Sydney. The remaining 60 were allocated to the other hospitals by the Committee for Placement of Resident Medical Officers.

The number who graduated was insufficient to fill the vacancies in the various hospitals.

The matter of the allocation of successful graduates to hospitals as resident medical officers, so that their interests and those of the hospitals may best be safeguarded, is at present receiving the attention of Council.

Annual Ball.

In view of the success which attended the Congress Ball, it was decided to hold an Annual Branch Ball. The first of these was held at the Trocadero on Tuesday, September 4, 1956. The Honourable Dr. D. A. Cameron, M.P., Minister for Health, and Mrs. Cameron were present, as also were a number of other guests representing the Armed Services and other professional organizations.

It was the general feeling of all present that the ball was a great success.

The next ball will be held at the Trocadero on Wednesday, July 24, 1957.

Golf Tournament.

The annual golf tournament for the British Medical Association Cup, presented by the late Dr. H. C. Rutherford Darling, was held on the golf course of the Australian Golf Club at Kensington on Tuesday, November 20, 1956. The winner was Dr. B. S. Mackie and the runner-up Dr. R. G. Bligh.

British Medical Agency of New South Wales Limited.

The annual general meeting was held on October 2, 1956.

The report, which was presented by the chairman, Dr. George Bell, showed a greatly increased profit over the previous year.

The Agency entered into an arrangement with the Australian Provincial Assurance Association, Limited, which has proved very satisfactory.

In order to give a more extensive service to members of the profession, the company has embarked on a more progressive policy by establishing:

1. An agency for the sale of Holden cars to medical practitioners within the metropolitan area of Sydney.
2. A service to provide receptionists and secretaries to doctors, which is being used by an increasing number of practitioners.
3. A book-keeping service for doctors and advice and clerical assistance on all taxation matters.

Medical Finance Limited.

The annual general meeting was held on October 2, 1956.

The report, which was presented by the chairman, Dr. George Bell, showed a small profit for the year.

During the year there was a slightly improved demand for the company's funds, but under the conditions which existed the company was not, for the time being, in a position to entertain further applications for assistance.

Premises Revenue Account.

The Premises Revenue Account discloses a net deficit of £144 as against a net surplus of £857 for the year ended December 31, 1955, thus showing a decrease of £1001 in the net revenue earned. This decrease is accounted for by a net decrease in income of £316 and a net increase in expenditure of £685 as set out in detail on the accompanying comparative statement.

A comparison of percentages of expenditure to rent revenue with those of December 31, 1955, is as follows:

	1955.	1956.
Percentages of expenses to revenue ..	97·10	100·48
Percentages of surplus to revenue ..	2·90	0·48
	100·00%	100·00%

The percentage of rent revenue, expenses and depreciation and the percentage of net surplus for the year to the capital

NEW SOUTH WALES BRANCH OF THE BRITISH MEDICAL ASSOCIATION.

BRANCH ACCOUNT.

Income and Expenditure Account for the Year ended December 31, 1956.

	£ s. d.	£ s. d.
To Salaries	12,440 8 7	
„ Rent—Offices *et cetera*	1,200 0 0	
„ Printing and Stationery	2,063 5 4	
„ Stamps and Telegrams	1,076 18 10	
„ Telephone	332 3 1	
„ Travelling Expenses—General	519 11 8	
„ Code Address	3 8 0	
„ Insurance	38 11 7	
„ Exchange and Bank Charges	12 9 11	
„ Refreshments—Meetings	78 4 0	
„ Newspapers and Advertising	62 19 11	
„ Sundry Petty Expenses	84 12 6	
„ Tea Money	99 5 9	
„ Federal Council	4,782 10 0	
„ Legal Expenses	173 17 9	
„ Repairs and Maintenance Equipment	60 17 6	
„ Pay Roll Tax	233 10 1	
„ Medical Benefits Fund—Staff	23 15 9	
„ Staff Superannuation Fund	625 15 4	
„ Incidental, Travelling and Entertainment Expenses	324 0 0	
„ Bank Interest	32 6 8	
„ Stamp Duty	45 2 9	
„ Dies for Medals	84 7 6	
„ Fares and Cartage	11 19 8	
„ Secretarial Services	117 12 0	
„ Laundry	21 13 1	
		24,549 7 3
„ Allowance for Depreciation of—Library	1,575 15 6	
Furniture and Equipment	182 16 11	
		1,758 12 5
„ Provision for Long Service Leave		100 0 0
„ Balance, being Surplus for the Year ended December 31, 1956, transferred to Accumulated Funds Account		520 15 2
		£26,928 14 10

	£ s. d.	£ s. d.
By Subscription Revenue		33,855 13 6
Less Proportion due to—British Medical Association	6,248 13 11	
THE MEDICAL JOURNAL OF AUSTRALIA	1,936 17 6	
		8,185 11 5
		25,670 2 1
„ Interest	646 19 3	
„ Rent—Assembly Hall	424 2 6	
„ Broadcasting and Journalist Fees	37 16 0	
„ Accountancy Fees	120 0 0	
„ Refund Expenses Federal Council	29 15 0	
		1,258 12 9
		£26,928 14 10

value of the land and building (British Medical Association House) as shown by the books at December 31, 1956, namely, £126,312, with the previous year's percentages in parentheses, are as follows:

Rent revenue (including amount charged for British Medical Association Branch offices *et cetera*)		23·18%	(23·9%)
Sundry expenses, interest, provisions for painting, *et cetera*	21·09%		(20·1%)
Depreciation of building ..	2·22%	23·31%	(2·2%)
		0·13%	(0·6%)

Financial Statement.

The Council has pleasure in presenting to members the balance sheet and accounts in respect of the financial year which terminated on December 31, 1956.

The net surplus of revenue over expenditure for the year amounted to £376 17s., after making provision for all known expenditure.

The sum of £4,613 has been written off for depreciation of the building (British Medical Association House), plant, office furniture and equipment and the library.

The sum of £800 has been provided out of the current year's revenue to create a reserve for painting of the exterior of the building and £150 as a provision for long service leave. These amounts, for the time being, are used in the business of the Association.

E. F. THOMSON,
President.

The balance sheet of the Branch and the income and expenditure account of the Branch and of the premises were received and adopted on the motion of Dr. H. H. Willis, seconded by Dr. M. S. Alexander.

Election of Office-Bearers.

Dr. E. F. Thomson referred to the retirement from the Council of Sir Charles Bickerton Blackburn and Dr. B. T. Edye. He said that Sir Charles Blackburn had served on the Council for forty-seven years, and Dr. Edye for twenty-five years. Dr. J. P. Lyttle, Dr. H. C. Barry, Dr. T. M. Clouston and Dr. J. A. Paul had also retired from the Council. Dr. Thomson moved from the chair that the Council should place on record its thanks to those members who had retired.

Dr. Thomson then announced that the following had been elected to the Council as representatives of the general body of members for the ensuing year: Dr. M. S. Alexander, Dr. D. A. Brown, Dr. J. F. C. C. Cobley, Dr. D. G. Hamilton, Dr. P. J. Kenny, Dr. R. H. Macdonald, Dr. A. W. Morrow, Dr. A. J. Murray, Dr. T. Y. Nelson, Dr. K. C. T. Rawle, Dr. W. F. Simmons, Dr. R. J. J. Speight, Dr. E. S. Stuckey, Dr. P. A. Tomlinson, Dr. D. A. Warden, Dr. Weeks White.

Elected as Representing Women Members.—Dr. Clair Isbister.

Elected as Representing the Public (Government) Medical Services.—Dr. H. H. Willis.

Elected as Representing Country Local Associations.—Dr. B. A. Cook, Dr. B. W. Monahan.

Elected as Representing Metropolitan Local Associations.—Dr. K. S. Jones, Dr. C. R. M. Laverty.

Messrs. F. W. Duesbury and Company were elected auditors for the ensuing year.

Election of Representatives of the Branch at the Annual Representative Meeting of the British Medical Association, 1957, Newcastle-on-Tyne.

On the motion of Dr. R. H. Macdonald, seconded by Dr. D. A. Warden, Dr. J. P. Lyttle, Dr. J. A. Paul and Dr. M. H. Elliot-Smith were appointed representatives of the Branch to attend the annual representative meeting of the British Medical Association to be held at Newcastle-on-Tyne from July 10 to 19, 1957.

Presentation of the Annual Branch Prize for an Essay on a Scientific Subject.

Dr. E. F. Thomson announced that the annual Branch prize for an essay on a scientific subject had been awarded for the first time. The subject set for the 1956 essay was "Infective Hepatitis", and the winner of the prize was Dr. C. E. Marshall. As Dr. Marshall was at the time of the meeting Associate Professor of Pathology at Dalhousie University, Halifax, Nova Scotia, Dr. Thomson presented the prize to Dr. G. A. W. Johnston, of the Kanematsu Institute of Pathology, Sydney Hospital, who received it on behalf of Dr. Marshall.

Incoming President's Address.

Dr. G. L. Howe delivered his incoming president's address, on the subject of "Local Associations".

Dr. Howe expressed his appreciation of the honour conferred upon him; he said that he was deeply conscious of the responsibility and obligations of the president's office, and that he would strive to maintain the high standards set by his predecessors. The Council of the New South Wales Branch of the British Medical Association had always given devoted service to its members—a fact which was appreciated by the great majority—although at times it might appear to receive more criticisms than praise. Members of Council were called upon to give freely of their time in attempting to solve the multitude of problems besetting the profession, and those problems seemed to become greater, not less, with the passing years. That burden of responsibility on councillors was a very big strain on their available time, their health and their pockets. Dr. Howe hoped that the profession generally would appreciate the debt of gratitude it owed those men for their honorary services on its behalf. Dr. Howe then said that it was with great regret that he had to record that Sir Charles Bickerton Blackburn and Dr. B. T. Edye had decided to retire from the Council. Sir Charles Blackburn had served for forty-seven years on the Council, and was president of the New South Wales Branch in 1920-1921. He had been chairman of the Ethics Committee for forty-four years, and a member of the committee since 1913. His knowledge, wisdom and understanding had been of incalculable value, and he had set a record for length and quality of service to the Association which would probably never be surpassed. Dr. B. T. Edye had served on the Council for twenty-five years and was president in 1938-1939. When members considered all the other honorary and onerous services still carried on by those two outstanding men, they could feel very thankful to them for serving so long and so faithfully. All joined in wishing them good health and a well-earned rest, and thanked them sincerely for all that they had done for the Association. Two other members of the Council, Dr. C. R. M. Laverty, the Honorary Secretary, and Dr. D. A. Brown, had suffered breakdowns in health; those present wished them a speedy recovery.

Dr. Howe went on to say that he proposed to speak about local medical associations. By-law 8 of the New South Wales Branch of the British Medical Association made the following provisions:

> Local Associations of Members of the Association, formed with the object of promoting the scientific, medico-political and medico-ethical interests of their members, may be affiliated to the Association.
>
> The local area of boundaries of Affiliated Local Associations shall be determined by the members thereof, subject to the approval of the Council.
>
> Each Affiliated Local Association shall be free to govern itself in such manner as it shall think fit, and for that purpose to make such rules as it shall think expedient, and to repeal or alter the same; but no such rule or repeal or alteration thereof shall come into operation until it has been submitted to and approved by the Council.
>
> Every Affiliated Local Association shall furnish to the Council in the month of January in each year a report of its proceedings during the previous year, together with a statement showing the names and addresses of all its members and such other particulars as the Council may require.
>
> Each Affiliated Local Association shall appoint a delegate to attend a Meeting of Delegates of the Affiliated Local Associations to meet the Council of the Association at least once in each year for the consideration of matters of common interest to the Local Associations and for the advice and assistance of the Council.
>
> The objects sought to be attained by the creation of such body of delegates as aforesaid are:
>
> 1. To bring the separate Local Associations into closer relations with one another with a view to securing:
>
> A. A common policy throughout the Association in matters of Ethics, Contract Practice, Medical Politics and Organization generally.

B. So far as differences in the conditions of practice in different localities will permit, uniform methods of procedure and uniform regulations in regard to professional relations of Members with one another and with other persons.

C. Such other objects as may be from time to time approved by the Council.

2. To bring the Affiliated Local Associations individually and collectively into closer touch with the Council with a view to developing a more vigorous corporate life in the British Medical Association as a whole throughout the State.

Dr. Howe pointed out that it would be seen that the local association represented a primary subdivision of the whole Branch, and was therefore the first common meeting place "to form a bond of union among the members of the profession and a medium through which their opinions can be easily ascertained or expressed" [Article 3 (2) of Memorandum of Association]. He emphasized the importance of that function of a local association meeting. Those who had spent many years on the Council could affirm that a great deal of the Council's work was referred to it from local association meetings, and that many constructive ideas emanated from that source, and also, of course, much criticism of some of the Council's actions. The point he wished to make was that an informed council must know its members' needs and be aware of their desires and criticisms, and the best sources of that information should be strong and well-run local associations. If a local association was to give to the Council a proper perspective regarding members' wishes, it was important that its members should be truly representative. He had heard many excuses for non-attendance or non-membership; but if one did not attend or did not belong, could one really criticize any action of the association without first examining one's own position? Quite apart from that aspect of a local association meeting, if one failed to belong or attend, one was missing the opportunity to form a bond of union with one's neighbouring practitioner, to share his thoughts and problems and to advance their mutual interests. Dr. Howe anticipated that some might say: "I belong to a special group or college." Nevertheless, the objects of any special group were limited to the collection, propagation and dissemination by and amongst members of the group of scientific knowledge, information, data and such other analogous scientific and incidental purposes as the Council might approve. From the medico-political point of view, special groups had no power, and it was at a local association meeting that any such problems should be discussed and views or resolutions sent on to the Council. Furthermore, specialist, general practitioner and salaried medical officer could all gain much by meeting in the friendly atmosphere of their local group. Each had something of benefit to give to the other, and a point of view which might be very advantageous in the discussions of the meeting. It was the experience of the Council that those whom it regarded as "the solid backbone of the profession" were generally members of their local association, and it was a point worthy of recording that more than half the members of the 1956-1957 Council had at one time taken an active part in the control of their local medical group.

A strong local association would depend on the zeal and efficiency of its leaders. In the bigger groups that could become a difficult problem for the secretary in sending out notices *et cetera*. Dr. Howe commended the practice of one of the best groups in employing a lay person to carry out that very necessary task. Next to the president and the secretary, the two most important officers of the local association (and they might be the same person) were the delegate to the annual meeting of delegates with the Council, and the delegate to the quarterly meetings of the Council. The annual meeting of delegates of local associations with the Council was regularly held on the last Friday in September, and if necessary on succeeding days. That was one of the most important meetings of the year, bringing together delegates from every local association in the Branch. It was unusual for any association to fail to send its representative. At that meeting the business was to discuss notices of motion submitted by any local association, and to pass or reject or amend them, voting being by delegates only. The resolutions passed were then sent on to the Council for its action. In that respect it should be recognized that delegates came to their annual meeting instructed in most instances on how they were to vote, the notices of motion having been circulated in advance of the meeting to the various local groups for their consideration. It had not been uncommon to hear a delegate state that after hearing the debate he would prefer to vote against a resolution, but that he had been instructed by his members to support it. Another point was that local associations varied greatly in numerical strength, from about 20 (the smallest) to 200 (the largest); yet the voting was not weighted, so that the vote of the smallest was equal at the meeting to the vote of the largest. That matter had been engaging the attention of the Council. He himself felt that the fairest and most democratic action would be to give each delegate a weighted vote according to the certified number of financial members of his association. Such a vote on any important matter would give the Council a much clearer view of the wishes of members. Often the Council had been attacked verbally for failing to implement the decisions of the annual meeting of delegates. As one who had always been a supporter of local associations and the representative of metropolitan local associations on the Council for many years, he could say that the opinions of the annual meeting of delegates were always highly regarded, and were rejected only when, after full inquiry and debate, the Council found them unacceptable for the majority of members, or impracticable and impossible to implement.

Dr. Howe then said that the attendance of delegates at the quarterly meetings of the Council had varied considerably, but had been much greater in the past year or so. At those meetings they had no vote, but might express their views for the benefit of the Council, if they were invited to do so. They held a watching brief, and could report back to their own members what was happening in the Council. A good delegate who attended regularly became a liaison officer between the two bodies, and could keep members informed on the current medico-political and other problems engaging the Council's attention and on the actions being taken by the Council to deal with them. If all local association delegates attended regularly and reported back regularly to a well-attended local association meeting, objections about lack of knowledge of the doings of the Council would lose their sting. The mechanism already existed for members to be properly informed, and it was good to see more interest being taken by delegates in the quarterly meetings. Dr. Howe knew that there were the difficulty and the expense of travel for delegates from country areas; but the Council had agreed to meet that cost, and part of the recent increase in subscriptions would be used for that purpose. However, it was suggested that the more remote country areas could appoint as their delegates practitioners living in the metropolitan area. Such a delegate should preferably have practised in a rural area, and should be prepared to send a detailed report of the quarterly meetings to the local association he represented. The Council during the last year had decided that a summary of the proceedings of the quarterly meetings should be sent to each local association, so that members would be properly informed on its actions in relation to current problems.

Dr. Howe then said that two matters especially had engaged the attention of the Council last year—the hospital policy and public relations. The hospital policy had been redrafted and printed, and a copy forwarded to every member. The general reaction had been one of approval; but dissatisfaction had been expressed by most at the delay in implementation of some of its important features. Whilst the profession had always cared for the indigent and had regarded the giving of honorary service as a duty which benefited both giver and receiver, there was a growing sense of dissatisfaction on the part of both patient and doctor with the present classification system in public hospitals. That was largely due to the fact that in most of them there was far too little provision for the so-called intermediate patient. At the present rate of building, it would take many years for that difficulty to be corrected. It was unfair to the patient who insures himself that he should be denied the use of a bed, when he could pay for his medical attention and choose his own doctor, merely because the hospital was not prepared to classify him as "intermediate" when he occupied a "public" bed, no other bed being available. It was also unfair to the doctor to ask him to give honorary service in such circumstances. The Council had approached the State Minister for Health on that matter, and his answer was that he would be prepared to allow collection of the insurance portion due so long as no charge was made to the patient. However, the Federal Act insisted that the patient must pay at least 10% of any fee, and all medical insurance funds would agree that such a provision was essential to preserve the actuarial basis on which they operated. The Council would continue to press for that (clause 3D of the hospital policy), and because of the undoubted justice of the case both for the public and for the profession, Dr. Howe felt sure their efforts would ultimately be successful.

Dr. Howe went on to say that a result of that increased demand by the public for intermediate accommodation was a smaller number of beds available for training resident medical officers, and in some hospitals that had already proved a problem. A subcommittee of the Council had fully considered the question of services rendered to private and intermediate patients by resident medical officers in public hospitals, and at the quarterly meeting of the Council held on March 26, 1957, the following resolution had been passed:

That:

(a) An open hospital be defined as a hospital that allows medical practitioners not on the regular staff to attend private and intermediate patients.

(b) In an open hospital the services of Resident Medical Officers should be available to all practitioners attending patients in the hospital.

(c) Resident Medical Officers should have access to paying patients for educational purposes. This should be by courtesy of the medical attendant, but should be accepted as a general rule.

(d) Resident Medical Officers should have no right of private practice either inside or outside the hospital; that is to say, they should not send accounts directly to patients, but the hospital should render the account where a charge is made.

(e) Anæsthetic and assistant services should ordinarily be provided by private practitioners, but the hospital should always make available the services of a resident medical officer in an emergency.

(f) Services such as lumbar puncture, blood transfusion, intravenous infusions etc. should be provided in emergencies and where the service is not available from a private practitioner. Where continuous intravenous therapy is needed for long periods it may be in the patients's interest for the hospital to supply the service.

(g) It is desirable that Resident Medical Officers should do a round of all patients in the hospital, both public and private. No charge should be made of the patient for this service.

(h) Where the hospital makes a charge for the services of a Resident Medical Officer, a proportion of the payment should be allocated to a Resident Medical Officers' Fund.

If that resolution was implemented by the Hospitals Commission, it should solve the problem and be a great benefit to patient, doctor and resident medical officers.

Dr. Howe then referred to the staffing of new hospitals. He said that the Hospitals Commission had insisted on a classified staff, and that would tend to exclude general practitioners from serving on their district hospitals. The Council had recommended that, when applications were called for, associate appointments should be made, so that for each position there would be, for example, (a) surgeon and associate surgeon, (b) physician and associate physician, and so on. It was thought that that method should meet the approval of the various Colleges and of the Hospitals Commission, and furthermore it should benefit the district in which the hospital was situated. Dr. Howe said that in that connexion he could not do better than quote from a report by the College of General Practitioners:

The advantages of these proposals are manifest:

(a) There is a continuity of patient care within the area of the district hospital. Domiciliary treatment, both before admission and after discharge, interlocks with hospital treatment, with the prospect of earlier return home and the consequent freeing of hospital beds.

(b) By virtue of the close general practitioner-consultant relationship there is a continuous and continuing education of the former.

(c) This tends to lead to a higher standard of professional service in the community with a decreased demand for hospital beds.

(d) Conversely the isolation of the general practitioner from hospital practice inevitably leads to lowered standards of patient care in the community. This results in inferior preventive medicine, the reference to hospital of patients with trivial complaints, careless and late diagnosis etc., all of which place a greater strain on the resources and increase the costs of the hospital.

Members of the Branch had continued to be disturbed by inaccurate reports appearing in the Press on medical matters and by the apparent lack of correction by the Council. In most instances a reply was given to the papers, but frequently they failed to publish it. Whilst it was news to publish that Mr. X in addressing a gathering had said that doctors' fees were exorbitant, it was probably considered of small news value to publish an official statement of rebuttal. The newly formed Public Relations Committee had spent the last year in trying to find out members' ideas, and members of the Council on the committee had visited most local associations with that object in view. During the coming year it was hoped to issue a "Public Relations Manual", and to develop a fuller programme as a result of the past year's inquiries. Meanwhile the profession should realize that the best relationship between doctor and patient was formed in the consulting room or at the bedside, and that so long as the patient and his best interests came first, so long would the members of the profession deserve their high personal prestige. It mattered not in the long run if the Press or sections of the public sniped at them as a body, so long as they maintained their great tradition of service to the sick, no matter what their station, creed or race.

In conclusion, Dr. Howe again stressed the importance of belonging to one's local medical association and taking an active interest in its affairs, whatever the section or special group to which one might belong. He said that those who held office in their local association had the responsibility of keeping their association strong and well informed on current affairs. A well-informed and united profession, which lived up to its ideal of service to the sick and suffering, had nothing to fear from the public, the Press or any political party.

A vote of thanks to Dr. Howe for his address was carried on the motion of Dr. K. S. Jones, seconded by Dr. Clair Isbister.

Induction of President.

Dr. E. F. Thomson inducted the President for the year 1957-1958, Dr. G. L. Howe, and invested him with the presidential badge of office. Dr. Howe thanked the members for his election.

Hospitals.

CANCER OF THE WOMB, 1930-1956: TREATMENT RESULTS AT THE KING GEORGE V MEMORIAL HOSPITAL, ROYAL PRINCE ALFRED HOSPITAL, COMPILED DECEMBER 31, 1956.

Cancer of the Cervix.

THE combined treatment of cervical cancer in the Royal Prince Alfred Hospital is pre-operative application of 70 milligrammes of radium for 100 hours followed, whenever possible, five to six weeks later by radical Wertheim's hysterectomy, which includes thorough lymphadenectomy. Those patients considered unfit for operation after having had the routine pre-operative irradiation are treated by a continuation of radiotherapy.

From 1930 to December 31, 1956, 1357 patients with cancer of the cervix were examined with a view to treatment, and 729 patients were treated surgically; this gives an

TABLE I.

Carcinoma Cervicis Uteri, 1930–1951; Royal Prince Alfred Hospital, Sydney: Five-Year and Ten-Year Cure and Survival Rates, Compiled December, 1956.[1]

Observation.	Five Years.	Ten Years.
All patients examined	959	634
All patients treated	907	600
Alive without recurrence	334	156
Alive with recurrence	10	2
Died of carcinoma	576	445
Died of intercurrent disease (under five and ten years)	18	19
Lost or not followed-up	21	12
Cure rate amongst all patients examined	34·8%	24·6%
Survival rate amongst all patients examined	35·9%	24·9%
Cure rate amongst all patients treated	36·8%	26·0%
Survival rate amongst all patients treated	37·8%	26·3%

[1] Up to December, 1956, 1357 patients had been examined with a view to treatment; 729 patients were treated surgically (operability rate, 53·7%); 23 patients died after operation (operative mortality rate, 3·15%).

TABLE IIA.

Royal Prince Alfred Hospital, Sydney: Carcinoma Cervicis Uteri: Five-Year Survival Rates, 1930 to 1951 (Compiled December, 1956).

Technique.	Stage 0.		Stage I.		Stage II.		Stage III.		Stage IV.		Total.	
	Number.	Alive.	Number.	Alive.	Number.	Alive.	Number.	Alive.	Number.	Alive.	Number.	Alive.
Application of radium and/or surgery ..	18	16	77	54	239	141	140	67	—	—	474	278 (58·6%)
Application of radium alone	—	—	10	6	68	15	231	36	98	6	407	63 (15·5%)
Application of radium and incomplete surgery	—	—	1	1	8	1	14	1	3	0	26	3 (11·5%)
No treatment	—	—	—	—	—	—	4	0	48	0	52	—
Total	18	16	88	61	315	157	389	104	149	6	959	344 (35·9%)

TABLE IIB.

Royal Prince Alfred Hospital, Sydney: Carcinoma Cervicis Uteri: Ten-Year Survival Rates, 1930 to 1946 (Compiled December, 1956).

Technique.	Stage 0.		Stage I.		Stage II.		Stage III.		Stage IV.		Total.	
	Number.	Alive.	Number.	Alive.	Number.	Alive.	Number.	Alive.	Number.	Alive.	Number.	Alive.
Application of radium and/or surgery ..	8	7	33	17	131	58	112	45	—	—	284	127 (44·7%)
Application of radium alone	—	—	5	1	47	11	168	16	80	2	300	30 (10·0%)
Application of radium *plus* incomplete surgery	—	—	1	1	4	0	8	0	3	0	16	1 (6·2%)
No treatment	—	—	—	—	—	—	2	0	32	0	34	0
Total	8	7	39	19	182	69	290	61	115	2	634	158 (24·9%)

operability rate of 53·7% of patients examined—a slight improvement over previously published statistics. Twenty-three patients died after operation, a mortality rate of 3·15%; this is a slight increase over some previous figures. The number lost or not followed up was increased—21 five years later, and 12 ten years later. It is thought that some of these lost patients are alive, but the task of following up, especially New Australians, who frequently move their abode from State to State or from town to town, renders difficult the problem of keeping in touch. All lost patients are recorded as dead.

TABLE IIIA.

Royal Prince Alfred Hospital, Sydney: Adenocarcinoma Cervicis Uteri: Survival Rates, 1930 to 1951.[1]

Observation.	Five Years.		Ten Years.	
	Number.	Alive.	Number.	Alive.
Patients treated with radium *plus* surgery	28	14	16	4
Patients treated with radium alone	31	—	27	—
Patients treated by incomplete surgery	2	—	0	0
No treatment	1	—	1	0
Total cases	62	14	44	4
Survival rate ..	—	22·6%	—	9·1%

[1] Of 28 patients treated surgically, five had glands involved—a similar proportion to the overall group. Of five patients with glands involved, all were in Stage II, and none survived five years. As previously, no patient healed by radium alone survived five years.

The survival rate of all patients treated remains about the same at five and ten years, except that in the most recent five-year period (1947 to 1951) there is an improvement from 37·8% to 44·9% of survivals amongst all patients treated. This is possibly due to improved surgical technique, better nursing and after care, better anæsthesia, the use of antibiotics and improved blood service.

Lymph gland involvement over the period from 1930 to 1951 has varied from 18% to 21%. The survival rates of those with uninvolved glands were respectively 64·6% at five years and 49·1% at ten years. The results obtained in cervical adenocarcinoma continue to be worse than those obtained in the squamous types of growth.

TABLE IIIB.

Royal Prince Alfred Hospital, Sydney: Survival Rates, Five and Ten Years, for Patients with Lymph Gland Involvement, 1930 to 1951.

Observation.	Five Years.	Ten Years.
Number of patients submitted to radical surgery	474	284
(*a*) Number found not to have glands involved	376	226
(*b*) Number found to have glands involved	98	58
Number alive in group (*a*)	243	111
Number alive in group (*b*)	30	12
Survival rate in group (*a*)	64·6%	49·1%
Survival rate in group (*b*)	30·6%	20·7%

TABLE IV.

Royal Prince Alfred Hospital, Sydney: Carcinoma Cervicis Uteri, 1947 to 1951: Survival Rate During Most Recent Five-Year Period.

Observation.	Five Years.
All patients examined with a view to treatment ..	325
All patients treated	307
Alive without recurrence	136
Alive with recurrence	2
Dead of carcinoma	163
Dead of intercurrent disease under five years	6
Lost or not followed-up	18
Cure rate amongst all patients examined	41·8%
Survival rate amongst all patients examined	42·5%
Cure rate amongst all patients treated	44·3%
Survival rate amongst all patients treated	44·9%

TABLE V.

Royal Prince Alfred Hospital, Sydney: Five-Year and Ten-Year Survival Rates of Carcinoma Corporis Uteri, 1930 to 1951.

Treatment.	Five-Year Survivals.						Ten-Year Survivals.					
	Number.	Alive.	Post-Operative Deaths.	Other Deaths.	Lost.	Survival Rate.	Number.	Alive.	Post-Operative Deaths.	Other Deaths.	Lost.	Survival Rate.
Application of radium and surgery, or surgery alone	186	131	4	40	11	70·4%	88	50	2	31	5	56·8%
Application of radium alone or radium *plus* deep X rays	34	4	3	26	1	11·8%	23	1	3	19	—	4·3%
Application of radium *plus* incomplete surgery or incomplete surgery alone	12	4	3	4	1	33·3%	5	1	3	1	—	20·0%
No treatment	8	—	—	8	—	—	5	—	—	5	—	—
Total	240	139	10	78	13	57·9%	121	52	8	56	5	43·0%

For further improvement of treatment results the cases must be detected earlier and earlier; this depends on the education of the practitioner and the care he gives, on the routine examination of the patient, especially round the menopause, and on the appearance of any unusual bleeding or discharge.

The most recent types of colposcope and colpomicroscope have much improved, and the early detection clinician can now discover early growths that would escape the human eye. These instruments are now used at King George V Hospital, together with the Papanicolaou test.

TABLE VI.

Royal Prince Alfred Hospital, Sydney: Five-Year Survivals in 240 Cases of Carcinoma of Corpus Uteri, 1930 to 1951 (International Classification).

Type of Carcinoma.	Number of Cases.	Alive at Five Years.
Carcinoma Corpus Uteri:		
Stage 0	4	3
Stage I:		
Group 1	180	125 (69·4%)
Group 2	15	3
Stage II	24	4
Total	219	132 (60·0%)
Carcinoma Corporis et Endocervicis	11	1
Carcinoma Uteri et Ovarii	6	3

Cancer of the Corpus Uteri.

The figures for carcinoma of the body of the uterus treated from 1930 to 1951 are clearly shown in Table V. Table VI sets out the results according to the International Classification, which is as follows.

In 1950 the International Gynæcological Congress recommended a new clinical classification for carcinoma of the *corpus uteri* to compare the results of treatment by surgery and treatment by radiotherapy. This classification was adopted for use in the "Annual Report on the Results of Treatment in Carcinoma of the Uterus", edited in Stockholm, to which the Royal Prince Alfred Hospital contributes. The stage of each case is determined according to certain rules at an examination prior to treatment, and this classification remains no matter what is found at operation. Carcinoma of the *corpus uteri* is classified as follows:

Stage 0.
Stage I: The growth is confined to the uterus.
  Group 1: operation advisable.
  Group 2: bad operative risk.
Stage II: The growth has spread outside the uterus.

If at the first clinical examination there is carcinomatous involvement of both the *cervix uteri* and the *corpus uteri*, or of both the ovary and the uterus, then the case is placed in a separate group—*carcinoma corporis et endocervicis*, or *carcinoma uteri et ovarii*.

Classification of the 240 cases in this series according to this system and the five-year survivals of each group are shown in Table VI.

It is obvious to the hospital staff that treatment should almost always be surgical. Treatment by radium alone has given very poor results in our hands.

When the statistics are considered, it should be realized that cancer in the body of the uterus occurs much later in life than cancer of the cervix, and that in the ten-year figures under other deaths consideration must be given to the scourges of old age, as the patients are mostly aged between seventy and eighty years.

Acknowledgements.

The staff pays tribute to the work of Dr. Frank Pigott for preparing the statistics on cancer of the cervix, and to Dr. Malcolm Coppleson for those on cancer of the body of the uterus. The staff wishes also to thank Miss M. Cunningham for her reliable secretarial work on behalf of the department.

Signed on behalf of the gynæcological staff of the King George V Memorial Hospital, Royal Prince Alfred Hospital.

HERBERT H. SCHLINK.

Out of the Past.

In this column will be published from time to time extracts, taken from medical journals, newspapers, official and historical records, diaries and so on, dealing with events connected with the early medical history of Australia.

SUPERINTENDENT OF TRANSPORT.[1]

SURGEON KENT, R.N., having been appointed to the ship Boddingtons, chartered to convey convicts from Cork to New South Wales, with the duty not only of assisting the surgeon in necessary attendance on the sick, but also of enforcing a compliance by the contractor with the various Stipulations made with him for the maintenance and supply of convicts and guard during the continuance of the voyage, the following instructions were issued to him by Under Secretary Nepean (12 Dec 1792). Previously to your embarkation you will see that a proper proportion of medicines and necessaries be provided by the contractor and that during the passage they are duly and promptly administered to the said convicts, as well as to the troops intended to be put on board for their security whenever their situation shall require it.

You will also be careful that the allowance of provisions specified in the contract a copy of which I enclose be regularly issued at sea, as well as in the several ports you may happen to touch at.

[1] From the original in the Mitchell Library, Sydney.

You will keep a regular return of the sick and of such as may die during the passage and transmit accounts thereof to me from time to time: and upon your return you will deliver into this office a general statement of your proceedings, together with your opinion how far the contractor shall have properly fulfilled his engagements.

Upon your arrival in New South Wales you will report to the Governor every occurrence that may have happened, and be governed by his advice as to the mode of your return, either in the ship in which you are to embark or by some more expeditious opportunity.

You will be allowed for your services at the rate of twelve shillings per diem from this date until your return to England unless that period be unnecessarily protracted by you. This allowance is to be looked on by you as a satisfaction for your services, and to cover all expenses whatsoever, including your victualling in New South Wales and after your return from thence.

I have only to add that your care and attention in fulfilling the duties of your station will be the means of recommending you in case any further service of the like nature should hereafter occur.

Correspondence.

CHLORPROMAZINE BASAL NARCOSIS FOR THYROIDECTOMY.

SIR: Would you please make note of a correction to my article, "Chlorpromazine Basal Narcosis for Thyroidectomy", published in THE MEDICAL JOURNAL OF AUSTRALIA, December 15, 1956. In this article I quoted the composition of the "lytic cocktail" as being a mixture of "chlorpromazine, promazine and pethidine". This should read "chlorpromazine, promethazine and pethidine". I understand that promazine is a composition similar to chlorpromazine with the absence of the chlorine radical.

The error is entirely due to my not correcting the proofs, and I apologize for any misinterpretation it may have produced among readers.

Yours,etc.,

17 Manuka Arcade,
Canberra, A.C.T.,
April 23, 1957.

B. F. FORD, M.B., B.S.

KINNIER WILSON: A CORRECTION.

SIR: Dr. Wilson of hepato-lenticular degeneration (M. J. AUSTRALIA, 1957, 1: 556) was a distinguished London neurologist. It is true that he had an M.D. from Edinburgh, but no matter how much he would have liked to bear a good Scots name like Kinnear,[1] he had, it seems, to rest content with his baptismal Kinnier.

Yours, etc.,

MAURICE EWING,
Professor of Surgery.

University of Melbourne,
Melbourne,
May 1, 1957.

ELECTRO-CONVULSIVE THERAPY IN STATUS EPILEPTICUS.

SIR: S. J. Cantor and N. R. Paterson (M. J. AUSTRALIA, April 27, 1957, in "Correspondence") have found that one application of electro-convulsive therapy will terminate *status epilepticus*. Although this is not standard practice, it has been recorded as a method of treatment in several standard text-books, and was read in Sargant and Slater's book on physical treatments in its 1948 edition. In the 1954 edition of that book, they state: "At the start of a status a single induced convulsion by the electrical method may terminate the condition; it would seem unwise to give it after status has lasted for many hours."

It has been known for a long while that an electrically induced convulsion given at the appropriate time will prevent a spontaneous fit (Brain, 1951). In this way, spaced electrical treatments may reduce the number of spontaneous epileptic fits which might occur in less favourable circumstances or even with some danger to the patient. Similarly, an epileptic who is "fitty"—that is, restless, difficult and irritable some hours or days before an attack—may be relieved by a therapeutic convulsion (Mayer-Gross *et alii*, 1955).

All fits, whether spontaneous or electrically induced, are supposedly followed by neuronal fatigue: "Each epileptic discharge carries with it the makings of its end, for this will supervene as soon as fatigue increases to a point where inexcitability is absolute" (Gastaut, 1954). So that the reason why an electrically induced fit should terminate status rather than status should terminate itself is not absolutely clear. It may be that the artificially induced fit in some way abolishes the cerebral dysrhythmia (which is the electrical basis of epilepsy), whereas the natural fit is only symptomatic of the dysrhythmia and in no way influences it, except to cause very temporary neuronal fatigue.

Yours, etc.,

ROGER W. WHITELEY, M.B., D.P.M.
Heathcote Reception Hospital,
Perth,
Western Australia.
May 1, 1957.

References.

BRAIN, W. R. (1951), "Diseases of the Nervous System", 4th Edition, Oxford University Press, p. 921.

CAPLAN, G. (1945), "Treatment of Epilepsy by Electrically Induced Convulsions", *Brit. M. J.*, 1: 511; quoted by Brain, W. R., *loco citato*.

GASTAUT, H. (1954), "The Epilepsies", Thomas, Springfield, p. 64.

MAYER-GROSS, W., *et alii* (1955), "Clinical Psychiatry", Cassell, London, p. 390.

SARGANT, W., and SLATER, E. (1954), "Physical Methods of Treatment in Psychiatry", 3rd Edition, Livingstone, Edinburgh and London, p. 136.

[1] This inadvertent error in spelling is regretted.—EDITOR.

A CASE OF LEPROSY IN A WHITE MALE EUROPEAN.

SIR: I refer to Dr. E. A. C. Farran's article in THE MEDICAL JOURNAL OF AUSTRALIA of April 20, 1957, on a case of leprosy in a white male European, and his stressing of the importance of biopsy. The extreme importance of the point I would make justifies, I feel, a note.

Types of skin lesions are legion: many conditions cause local anæsthesia or hypoæsthesia. As far as I know, however, there is only one disease characterized by skin lesions in which anæsthesia is confined to the lesions, and that is leprosy. (It goes without saying that nerve and other lesions are looked for.) This consideration has made the diagnosis of four cases of maculo-anæsthetic leprosy (three unsuspected) in white patients, referred to me in Perth, a simple matter. Biopsy there, of course, becomes important. Attention, however, to the point mentioned will often enable a certain diagnosis to be made before the biopsy.

I should be surprised if, in Dr. Farran's patient, there was not when he was first seen, and is not now, hypoæsthesia or anæsthesia of most of the skin lesions, the character of which this is not the proper place to discuss. The anæsthesia, however, often develops very soon after the first appearance of the lesions.

Yours, etc.,

GERALD C. MOSS.

Peppermint Grove,
Western Australia,
April 25, 1957.

TETANUS PROPHYLAXIS.

SIR: Two articles appeared in THE MEDICAL JOURNAL OF AUSTRALIA of May 4, 1957, on the subject of raising the level of immunity to tetanus. The rapid removal of antitoxin, made in the horse, from the circulation of those people who have some degree of hypersensitivity to horse serum is rightly stressed.

The best treatment of such patients is to produce active immunity to the toxin, and so make the use of passive immunity unnecessary.

Both articles recommend that immunization with toxoid be commenced three weeks after the injection of the antitoxin. This delay means that a proportion of patients will

disappear and a further proportion will fail to get the second injection of the basic immunization some six weeks later.

If the first injection of toxoid were given at the time of injury, the basic immunization would be complete with one further attendance at hospital or to private practitioner, and a much higher proportion of patients protected.

A slight depression of response to toxoid caused by the presence of passive antibody is more than outweighed by the benefit of a greater proportion of such patients actively immunized. A similar active-passive immunization is standard practice in diphtheria.

Following therapeutic doses of antitoxin there may be significant interference with the response to toxoid, so active immunization should be delayed in such cases.

It is pleasing to see attention being given to the problem of the patient who has been made sensitive to horse serum.

Yours, etc.,

P. M. DE BURGH,
Professor of Bacteriology.

Department of Bacteriology,
University of Sydney,
May 8, 1957.

Post-Graduate Work.

THE MELBOURNE MEDICAL POST-GRADUATE COMMITTEE.

PROGRAMME FOR JUNE, 1957.

Courses for Higher Qualifications.

Course in Medicine.—Commencing on June 3, 1957, the honorary medical staff of the Alfred Hospital will conduct a course in medicine suitable for candidates for senior medical qualifications such as M.D. II and M.R.A.C.P. The course will continue full time for eight weeks. Enrolments, together with the fee of £31 10s., should be sent to the Melbourne Medical Post-Graduate Committee.

Course in Pathology for the F.R.A.C.S.—The Committee has arranged for the holding of a course of twelve lectures in pathology suitable for candidates for the F.R.A.C.S. This will be conducted at the Department of Pathology, University of Melbourne, on Mondays and Wednesdays at 1.45 p.m., commencing on June 26. The fee is £7 7s.

Course in Psychiatry.—A course in psychiatry suitable for candidates for D.P.M. II, and of interest to the medical profession generally, will be conducted by the Australasian Association of Psychiatrists. This will commence on June 25 and continue on Tuesday evenings at 8 p.m. till early October. Classes will be held at 45 Spring Street, Melbourne. The fee is £10 10s., and the Melbourne Medical Post-Graduate Committee will take the enrolments, on their prescribed forms.

Course in Radiodiagnosis.—The Committee, in consultation with the College of Radiologists of Australasia, will conduct a course in radiodiagnosis suitable for candidates for the D.D.R. and D.C.R.A. This will commence on May 27 and continue till the end of August; lectures will be given at various hospital X-ray departments at 4.30 p.m. on Mondays and Thursdays. A detailed time-table is available from the Committee. The fee is £21.

Course in Laryngology, Otology and Special Pathology.—The Victorian Division of the Oto-Laryngological Society of Australia (British Medical Association) will conduct a course suitable for candidates for D.L.O. II. This will commence on June 4, and lectures will be held on Tuesdays and Thursdays, mainly at 5 p.m., at the Eye and Ear Hospital. The fee for the course is £21, and enrolments should be made through the Melbourne Medical Post-Graduate Committee. The lectures will be of interest as general study to those not undertaking examinations and may be attended on a pro-rata fee. They will continue till late August.

Lectures by Mr. C. P. Wilson, of London.

Mr. C. P. Wilson, ear, nose and throat surgeon, of Middlesex Hospital, will visit Melbourne for one week from June 21 to 28, 1957, and will give the following lectures for the Melbourne Medical Post-Graduate Committee in the Medical Society Hall at 8.15 p.m.: Monday, June 24, "Sneezing, Snuff and Smoking"; Thursday, June 27, "Exudative Otitis Media". The fee for each of these lectures is 15s., but those who have paid an annual subscription to the Committee are invited to attend without further charge.

In addition to the foregoing lectures, Mr. Wilson will follow a programme arranged by the Victorian Division of the Oto-Laryngological Society of Australia (British Medical Association), which includes the following: Monday, June 24: morning visit to Prince Henry's Hospital with discussion on "Pharyngeal Pouch". Tuesday, June 25: afternoon clinical meeting at the Eye and Ear Hospital, followed by an evening lecture there on "Laryngeal Paralyses". Wednesday, June 26; morning discussion on "Choanal Atresia" at the Royal Children's Hospital; afternoon lecture at the Eye and Ear Hospital on "Carcinoma of Upper Jaw". Thursday, June 27: morning discussion at the Royal Melbourne Hospital on "Tongue and Naso-Pharynx".

Demonstration at Flinders Naval Depot.

On Wednesday, June 5, Mr. A. J. W. Ahern will discuss "Internal Fixation of Fractures". This lecture will be given by arrangement with the Royal Australian Navy.

Clinico-Pathological Conferences.

Professor Maurice Ewing has arranged a series of clinico-pathological conferences, which are being held on the first and third Tuesdays in each month at 5.15 p.m. These are designed primarily for the younger surgeons and those who are completing their surgical training, but are open to all. The dates and places are as follows: June 4, Royal Melbourne Hospital; June 18, Saint Vincent's Hospital; July 2, Alfred Hospital; July 16, Prince Henry's Hospital; August 6, Royal Melbourne Hospital; August 20, Saint Vincent's Hospital; September 3, Alfred Hospital; September 17, Prince Henry's Hospital; October 1, Royal Melbourne Hospital; October 15, Saint Vincent's Hospital; October 29, Alfred Hospital; November 19, Prince Henry's Hospital; December 3, Royal Melbourne Hospital; December 17, Saint Vincent's Hospital.

Information.

The address of the Melbourne Medical Post-Graduate Committee is 394 Albert Street, East Melbourne. Telephone: FB 2547.

Naval, Military and Air Force.

APPOINTMENTS.

THE following appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, No. 19, of March 28, 1957.

AUSTRALIAN MILITARY FORCES.

Australian Regular Army.

Royal Australian Army Medical Corps (Medical).

4/8045 Captain P. B. Opie is appointed from the Regular Army Special Reserve, Royal Australian Army Medical Corps (Medical), and to be Captain, 14th February, 1957.

Regular Army Special Reserve.

Royal Australian Army Medical Corps (Medical).

SX700104 Captain P. B. Opie is appointed to the Australian Regular Army, Royal Australian Army Medical Corps (Medical), 14th February, 1957.

To be Captains: Lieutenants VX700375 R. M. Compton, 2nd January, 1957, NX700471 R. M. Tracey, 7th January, 1957, and VX700370 R. U. H. Meyer and VX700372 J. J. Robinson, 14th January, 1957.

Citizen Military Forces.

Northern Command.

Royal Australian Army Medical Corps (Medical).—1/39198 Honorary Captain H. A. Urquhart is appointed from the Reserve of Officers, and to be Captain (provisionally), 22nd January, 1957. The following officers are transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (Northern Command): Captain 1/39022 P. J. Landy, 15th January, 1957, and 1/39086 W. H. Tait, 16th January, 1957. The provisional appointment of 1/33186

Captain K. F. Brady is terminated, 21st February, 1957. 1/62913 Captain C. I. Wilkinson is transferred to the Reserve of Officers (Royal Australian Medical Corps (Medical)) (Northern Command), 12th January, 1957. To be Major, 26th February, 1957: 1/13218 Captain J. W. Woodburn. To be Captain (provisionally), 22nd February, 1957; 1/33136 Keith Ferguson Brady. 2/269301 Lieutenant (Honorary Captain) W. M. McCulloch is appointed from the Reserve of Officers, 7th February, 1957. To be Major, 26th February, 1957: 2/166974 Captain (Temporary Major) K. E. Hayward. To be Temporary Captain, 21st February, 1957: 2/269302 Lieutenant (Honorary Captain) W. M. McCulloch. To be 2nd Lieutenant (provisionally), 11th September, 1956: 2/244843 Clifton Keith Power.

Eastern Command.

Royal Australian Army Medical Corps (Medical).—To be Lieutenant-Colonels: Majors (Temporary Lieutenant-Colonels) 2/52118 E. H. Hipsley, 25th October, 1956, and 2/70937 A. L. Hellestrand, 12th February, 1957. To be Captain (provisionally), 1st February, 1957: 2/142616 John James Waddell. The provisional appointment of 2/127895 Captain G. A. O'Neill is terminated, 20th January, 1957. The age for retirement of 2/226103 Captain R. H. Kaines is extended until 17th February, 1959. 2/206956 Major G. L. McDonald is transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (Eastern Command), 11th January, 1957. To be Captain (provisionally), 21st January, 1957: 2/127895 Gerald Allen O'Neill.

Southern Command.

Royal Australian Army Medical Corps (Medical).—3/50196 Lieutenant-Colonel C. D. Donald, E.D., relinquishes command 6th Field Ambulance, 1st January, 1957, is appointed Assistant Director of Medical Services, Headquarters 3rd Division, and to be Temporary Colonel, 2nd January, 1957. 3/82441 Major D. C. Cowling is appointed to command 6th Field Ambulance, and to be Temporary Lieutenant-Colonel, 2nd January, 1957.

Central Command.

4/31911 Major F. E. Welch is appointed to command 1st Casualty Clearing Station, and to be Temporary Lieutenant-Colonel, 25th February, 1957. 4/31903 Lieutenant-Colonel C. M. Gurner relinquishes command 1st Casualty Clearing Station, 24th February, 1957, and is seconded whilst undergoing post-graduate studies in the United Kingdom, 25th February, 1957. The provisional rank of 4/32070 Captain (Temporary Major) A. K. Grant is confirmed.

Western Command.

Royal Australian Army Medical Corps (Medical).—5/26530 Captain (provisionally) S. Shub relinquishes the provisional rank of Captain, 8th January, 1957, is transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (Western Command), and is granted the honorary rank of Captain, 9th January, 1957. 5/32078 Captain (provisionally) J. G. Golledge relinquishes the provisional rank of Captain, 8th January, 1957, and is transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (Western Command), in the honorary rank of Captain, 9th January, 1957.

Reserve Citizen Military Forces.

Royal Australian Army Medical Corps (Medical).

Northern Command.—To be Honorary Captain, 28th January, 1957: Bryan Edmund Todd.

Eastern Command.—To be Honorary Captain, 5th February, 1957: Bruce Mitchell Allen.

Southern Command.—Honorary Major W. P. Holman is retired, 16th September, 1954.

ROYAL AUSTRALIAN AIR FORCE.

Permanent Air Force.

Medical Branch.

The following are appointed to a short-service commission, on probation for a period of twelve months, with the rank of Flight Lieutenant: John O'Halloran (0218190), 28th November, 1956; Eric Richard Bowler (0310759, 4th December, 1956; Thomas Joseph Gardner (0218191), 10th December, 1956; Denis Timothy Burke (0218197), 7th January, 1957.

The following are appointed to a temporary commission, with the rank of Pilot Officer (Student): Clive Frazer

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED APRIL 27, 1957.[1]

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern Territory.	Australian Capital Territory.	Australia.
Acute Rheumatism	1	1(1)	2(1)	..	..	..	..	..	4
Amœbiasis	..	..	..	..	..	..	..	..	..
Ancylostomiasis	4	..	19	..	..	..	..	..	23
Anthrax	..	..	..	..	..	..	..	..	..
Bilharziasis	..	..	..	..	..	..	..	..	..
Brucellosis	..	..	..	..	..	..	..	..	..
Cholera	..	..	..	..	..	..	..	..	..
Chorea (St. Vitus)	..	..	..	..	..	..	..	..	..
Dengue	..	..	..	..	..	..	..	..	..
Diarrhœa (Infantile)	3(3)	12(10)	2(1)	..	..	1	..	..	18
Diphtheria	4	1	..	..	..	2(1)	..	..	7
Dysentery (Bacillary)	..	1	2(1)	..	..	1	..	..	4
Encephalitis	2(1)	1	..	..	..	..	..	..	3
Filariasis	..	..	..	..	..	..	..	..	..
Homologous Serum Jaundice	..	..	..	..	..	..	..	..	..
Hydatid	..	..	..	..	..	..	..	..	..
Infective Hepatitis	34(14)	28(11)	..	2(1)	4(2)	1	..	..	69
Lead Poisoning	..	..	..	..	..	..	..	..	..
Leprosy	..	..	..	..	..	..	..	..	..
Leptospirosis	..	..	4	..	..	..	..	..	4
Malaria	..	..	4	..	..	..	1	..	5
Meningococcal Infection	..	3(2)	2	..	..	..	..	..	5
Ophthalmia	..	..	..	..	..	..	..	..	..
Ornithosis	..	..	..	..	..	..	..	..	..
Paratyphoid	1	..	..	..	..	..	..	..	1
Plague	..	..	..	..	..	..	..	..	..
Poliomyelitis	1	..	..	..	..	..	..	..	1
Puerperal Fever	1	..	2	..	..	..	..	..	3
Rubella	..	16(9)	..	10(8)	1	..	..	..	27
Salmonella Infection	..	..	..	..	..	..	..	..	..
Scarlet Fever	12(5)	22(12)	5(4)	3(2)	1(1)	1(1)	..	..	44
Smallpox	..	..	..	..	..	..	..	..	..
Tetanus	..	..	..	..	..	..	..	..	..
Trachoma	..	..	..	..	..	..	..	..	..
Trichinosis	..	..	..	..	..	..	..	..	..
Tuberculosis	12(10)	10(5)	9(4)	4(3)	4(1)	7(1)	..	..	46
Typhoid Fever	..	..	..	..	..	..	..	..	..
Typhus (Flea-, Mite- and Tick-borne)	..	..	2	..	1	..	..	..	3
Typhus (Louse-borne)	..	..	..	..	..	..	..	..	..
Yellow Fever	..	..	..	..	..	..	..	..	..

[1] Figures in parentheses are those for the metropolitan area.

Allardyce (0218325), 27th September, 1956; Lawrence Glanville Trappett (015935), 1st October, 1956.

Wing Commander H. J. Melville (03175) is placed on the Retired List, 29th December, 1956.

The resignation of the following officers is accepted: Squadron Leader P. A. O'Brien (035952), 31st January, 1957; H. W. McKenna (0217686), 1st February, 1957.

Nominations and Elections.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Gillies, Malcolm John, M.B., B.S., 1955 (Univ. Sydney), 54 Muston Street, Mosman, New South Wales.

Kronenberg, Harry, M.B., B.S., 1952 (Univ. Sydney), 350 Lyons Road, Fivedock, New South Wales.

The undermentioned has applied for election as a member of the South Australian Branch of the British Medical Association:

Smith, Frank Stewart, M.B., B.S., 1955 (Univ. Adelaide), 5 Fullarton Road, Netherby, South Australia.

The undermentioned have been elected as members of the South Australian Branch of the British Medical Association: Zacharia, William Vassalie, M.B., B.S., 1955 (Univ. Adelaide); Begg, Malcolm William, M.B., B.S., 1955 (Univ. Adelaide).

Royal Australasian College of Surgeons.

FACULTY OF ANÆSTHETISTS.

New South Wales State Committee.

A MEETING of the New South Wales State Committee of the Faculty of Anæsthetists of the Royal Australasian College of Surgeons will be held on Wednesday, June 5, 1957, at 8 p.m., at the Stawell Hall, 145 Macquarie Street, Sydney. Dr. Robert Orton, F.F.A.R.A.C.S., Director of Anæsthetics of the Alfred Hospital, Melbourne, will speak on "Deliberate Hypotension and Hypothermia". All members of the medical profession are invited to be present.

University Intelligence.

UNIVERSITY OF MELBOURNE.

THE following new appointments to the staff of the University of Melbourne have been announced in the *University of Melbourne Gazette* of April, 1957.

Dr. J. G. Hayden has been appointed to the Chair of Medicine at St. Vincent's Hospital, Melbourne.

Dr. W. T. Agar has been promoted to the rank of Reader in Physiology.

Dr. J. O. Lavarack has been promoted to the rank of Reader in Histology and Embryology.

Deaths.

THE following deaths have been announced:

FISHER.—Ernest Frederick Fisher, on April 6, 1957, at West Wyalong, New South Wales.

FITZPATRICK.—Edwin Bede Fitzpatrick, on April 28, 1957, at Lewisham, New South Wales.

FOX.—Arthur Wesley Fox, on April 28, 1957, at Brisbane.

JONES.—William Ernest Jones, on May 1, 1957, at Melbourne.

PRICE.—Thomas Arthur Price, on May 1, 1957, at Toowoomba, Queensland.

PEARLMAN.—Samuel Pearlman, on May 6, 1957, at Glenelg, South Australia.

Medical Appointments.

Dr. B. P. McCloskey has been nominated by the Minister of Health to be a member of the Council of Adult Education, Victoria.

Dr. V. M. Hercus has been appointed Visiting Assistant Anæsthetist to the Royal Alexandra Hospital for Children, Sydney.

Dr. David Robert Woods has been appointed Quarantine Officer, New South Wales.

Dr. R. F. Lowe has been appointed a member of the Opticians Registration Board, Victoria, pursuant to the provisions of Section 4 (4) (*b*) (iii) of the *Opticians Registrations Act*, 1935.

Dr. P. A. Tynan has been appointed Government Medical Officer at Mount Isa, Queensland.

Dr. Nandor Ballai has been appointed Registrar (Radiological Department) at the Royal Adelaide Hospital, Adelaide.

Dr. C. G. C. Readshaw has been appointed Government Medical Officer at Winton, Queensland.

Dr. J. W. Best has been appointed Government Medical Officer at Warwick, Queensland.

Diary for the Month.

MAY 21.—New South Wales Branch, B.M.A.: Medical Politics Committee.
MAY 22.—Victorian Branch, B.M.A.: Branch Council.
MAY 23.—New South Wales Branch, B.M.A.: Clinical Meeting.
MAY 24.—Queensland Branch, B.M.A.: Council Meeting.
MAY 28.—New South Wales Branch, B.M.A.: Ethics Committee.
MAY 30.—South Australian Branch, B.M.A.: Clinical Meeting.
MAY 30.—New South Wales Branch, B.M.A.: Branch Meeting.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): All contract practice appointments in New South Wales.

Queensland Branch (Honorary Secretary, B.M.A. House, 225 Wickham Terrace, Brisbane, B17): Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 80 Brougham Place, North Adelaide): All contract practice appointments in South Australia.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

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